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DIAGNOSTIC IMPORTANCE OF TUBERCULOUS LESIONS OF THE ORAL CAVITY *

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AND

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PHILADELPHIA

Tuberculosis of the oral mucous membrane occurs in two principal forms—lupus and tuberculous ulceration proper. In lupus, the mouth involvement is nearly always an extension of the disease from the skin of the face. The lesions are superficial and slowly progressive, and have little tendency to ulceration and extensive tissue destruction, tending rather to the formation of scar tissue. Of 964 cases of lupus seen by Sequeira,[1] ninety-five, or about 10 per cent., presented oral lesions.

Tuberculous ulceration proper is characterized by the breaking down of miliary tubercles, with the formation of one or more points of ulceration of the mucous membrane. Almost any part of the mouth may be involved, but especially the tongue, the gums, and the hard and soft palate. The ulcer is irregular in shape, not as a rule deep, with slightly undermined but not elevated margins, and with little or no induration. The surface presents a characteristic granular appearance, being covered with reddish and yellowish elevated points, with occasional yellowish streaks. Pain is a fairly constant feature, especially early in the disease, before cicatrization has set in. The tendency is to grow progressively worse, the deeper tissues and eventually the underlying bone being frequently involved.

HISTOLOGY

The microscopic appearance of the tissue removed from tuberculous ulcers of the mouth has been extensively studied by Clark,[2] Hansemann,[3] Coolidge,[4] Auché and Carrière,[5] Morestin,[6] Strandberg,[7] Roussy and Bertrand,[8] and Handfield-Jones.[9] All report the presence of typical tubercles, consisting of giant cells, epithelioid cells and round cell infiltration. In many cases it was possible to demonstrate tubercle bacilli, few in number, usually within the giant cells. Caseation was rarely recorded. Roussy and Bertrand call attention to descending processes of epithelium penetrating between the papillae of the corium more deeply than normal—evidence of an inflammatory reaction.

ORIGIN OF THE LESIONS

Tuberculous ulceration of the mouth is very rarely primary, although the possibility of its occurrence through carious teeth and abrasions and lacerations of the oral mucous membrane should not be overlooked. The ulceration in the mouth undoubtedly is usually secondary to pulmonary tuberculosis, the infection being conveyed by the sputum. It is not likely to occur in an otherwise healthy mouth. The tubercle bacilli are implanted in a region that has previously been the seat of a local inflammatory dental lesion, such as gingivitis or dento-alveolar disease.

DIAGNOSIS

Tuberculous ulceration of the oral mucous membrane is occasionally of diagnostic importance in relation to pulmonary tuberculosis. We have seen at least three cases in which the finding of the ulceration in the mouth was the first intimation to the patient that he was suffering from pulmonary disease. Any chronic or progressive ulceration in this region should therefore be investigated from the standpoint of pulmonary tuberculosis. Handfield-Jones found that one of his four patients with secondary tuberculous ulceration of the tongue was unaware of the lung involvement until the oral lesion was recognized.

Tuberculous ulceration of the oral mucous membrane must be differentiated from simple or traumatic ulcer, syphilitic ulcer and epithelioma. The points to be observed in differentiation are depth, general appearance, the edges, induration, pain, chronicity, general physical findings, sputum examination, serologic reactions, examination of excised tissue, and animal inoculation.

The tuberculous ulcer is usually shallow, presents a granular surface, being covered with small red and yellow elevations, has irregular, sometimes undermined, but not elevated or indurated margins, is generally very painful and tender, and tends to progress gradually.

Traumatic ulcer nearly always has an obvious local cause, such as a rough tooth or the sharp edge of a

* From the Thomas W. Evans Museum and Dental Institute School of Dentistry, University of Pennsylvania.

* Chairman's address, read before the Section on Stomatology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Sequeira, J. H., in Allbutt and Rolleston's System of Medicine **9**: 470-472, 1911.
2. Clark, W. F.: Tubercular Lupus of Tongue, Palate and Gums, Tr. Path. Soc. London **27**: 148, 1875.
3. Hansemann, D.: Ueber die Tuberkulose der Mundschleimhaut, Arch. f. path. Anat. u. Physiol. u. f. klin. Med. **103**: 264-275, 1886.
4. Coolidge, A. J.: Tubercular Ulceration of the Palate and Gums, Boston M. & S. J. **126**: 437-439, 1892.
5. Auché and Carrière: Etude histologique de l'ulcère tuberculeux de la langue, J. de mal. cutan. et syph. **10**: 169, 1898.
6. Morestin, H.: Glossite tuberculeuse, Bull. et mém. Soc. anat. **8**: 453, 1906.
7. Strandberg, O.: Berl. klin. Wchnschr. **41**: 1078, 1912.
8. Roussy and Bertrand: Lessons in Pathological Histology, Ed. 2, Philadelphia, Lea and Febiger, 1922, p. 48.
9. Handfield-Jones, R. M.: Lingual Tuberculosis, Lancet **1**: 8 (Jan. 6) 1923.

plate, varies in depth and shape, is covered with yellowish or grayish slough, with bright red surrounding area, is slightly indurated and very painful, and tends to improve on removal of the local irritation.

The syphilitic ulcer is deep and punched out, with ragged undermined edges, and with little or no pain and no induration.

Epitheliomatous ulceration is deep, with very irregular raised everted edges and marked induration, and is painful.

The presence of physical signs of pulmonary tuberculosis and tubercle bacilli in the sputum is helpful in the diagnosis, although this would not exclude the coexistence of syphilis or carcinoma. The final diagnosis should rest on the finding of tubercles in tissue excised from the lesion, and the recovery of tubercle bacilli from lesions in guinea-pigs injected with emulsion of the excised tissue.

REPORT OF CASES

CASE 1.—W. C., a man, aged 52, white, single, an ironworker, seen Jan. 14, 1914, on account of ulceration in the mouth, had always enjoyed good health. He stated that he had no venereal infection. He had a slight cough and brought up mucus in the morning. He did not think he had lost much weight lately. The present trouble began about six months before as a small sore on the inner side of the right cheek. This gradually spread to the lower lip. Soon afterward, ulceration began on the left side in the region of the upper molar and premolar teeth, which had also been slowly getting larger. He had had very little pain.

Examination showed an extensive and fairly deep ulceration of the inner side of the right cheek, extending on the lower lip. There was also an ulceration on the outer side of the alveolar ridge in the upper left molar and premolar region. The edges of the ulcers were irregular and undermined, but not indurated, and the surface presented a granular appearance, being red, with numerous yellowish dots scattered over it, somewhat like a strawberry. The cervical lymph nodes were not enlarged.

The patient was a pale, rather emaciated man. Chest expansion was poor, with evidence of a quiescent tuberculous lesion at the apex of the right lung. Sputum examination showed tubercle bacilli. The Wassermann reaction was negative.

Under procain anesthesia, a small piece of tissue from the ulcer was excised. It showed many typical tubercles, consisting largely of epithelioid cells, a few giant cells, and round cell infiltration. No tubercle bacilli were found in the sections.

The diagnosis was tuberculous ulceration of the oral mucous membrane, secondary to pulmonary tuberculosis.

CASE 2.—W. F., a man, aged 30, white, married, a butler, seen, Oct. 20, 1922, complained of soreness of the mouth. There was nothing of significance in the previous history. He was in good health, as far as he knew. There was no cough, and he was unaware of any loss of weight. Two months before, he noticed that a bridge connected with the upper right teeth was gradually becoming loose, and finally two teeth to which it was attached fell out. The gum in this region became very sore, and bled easily.

Examination showed that the upper right teeth back of the canine were missing. There was a large area of ulceration of the gum in the region of the absent premolar and molar teeth, involving the outer side of the alveolus and passing well over on to the palate, gradually shading off into the normal mucosa toward the median line and back to the soft palate. The ulcerated area had irregular margins, which were not raised or indurated, and had a granular yellow and red surface.

Chest examination by the Henry Phipps Institute showed signs of infiltration without râles in the right upper lobe. The Wassermann test was negative.

Under procain anesthesia, a small piece of tissue from the mouth lesion was excised and studied as follows:

(*a*) Part of the tissue was fixed and hardened in paraffin, and sections were made. Some of the sections were stained to demonstrate acid-fast micro-organisms, but search for these was unsuccessful. Sections stained with hematoxylin and eosin were most suggestive of tuberculosis, showing many giant cells, epithelioid cells and lymphocyte infiltration. No caseation was found. In places there appeared to be proliferation downward of the surface epithelium, in conformity with the observation of Roussy and Bertrand, previously mentioned.

(*b*) Small pieces of tissue were crushed between slides, and the resulting films stained by the Ziehl-Neelson carbolfuchsin method, but prolonged search failed to reveal acid-fast bacteria.

(*c*) A small piece was placed with aseptic precautions in a test tube which had a little sterile sand in the bottom moistened with bouillon. This was thoroughly ground up and a suspension prepared by the addition of about 1.5 c.c. of sterile physiologic sodium chlorid solution. The suspension was injected into the liver of a guinea-pig, as recommended by H. R. Miller.[10] The animal died twenty-six days later, the weight curve of the intervening period showing a characteristic drop. Necropsy was performed immediately after death. The liver and spleen showed typical gross appearances of tuberculous infection. The peritoneum over the liver showed fifteen or twenty small nodules, from 1 to 2 mm. in diameter. Sections from the liver, spleen and peritoneal nodules showed definite miliary tubercles, and, when stained appropriately, many tubercle bacilli were to be seen in these areas.

The patient was given directions concerning proper hygiene, diet and rest. Local treatment has consisted of keeping the parts clean, and application of dichloramin-T about three times a week. Feb. 28, 1923, it became necessary to curet the floor of the maxillary sinus, the bone having become exposed, and extract the three remaining teeth on the right side. The local treatment has been continued up to the present time. The patient has shown progressive gain in weight and improvement in the local condition. There is now very little evidence of trouble on the palatal surface, and the entire local lesion is markedly reduced in size. Complete cure is confidently expected.

CASE 3.—C. S., a man, aged 49, white, a doorkeeper, seen Nov. 11, 1922, was referred by his dentist owing to persistent soreness of the mouth in the lower left premolar region after the extraction of teeth. Examination of this region showed an area of ulceration with ragged, nonraised edges and typical granular appearance. The patient stated that he had no cough and enjoyed good health. The only reason for consultation was that his mouth would not heal up and he could not wear artificial teeth. He was emaciated, and other physical findings were practically the same as in the previous cases.

A piece of tissue from the mouth lesion was removed and subjected to the same examinations as in Case 2, with identical results, both histologically and by guinea-pig inoculation. Under hygienic regimen and curetting of the mouth lesion, the latter healed up entirely in two months.

COMMENT

The point we wish particularly to stress in each of these cases is that the patient was quite unaware of the pulmonary condition until recognition of the mouth lesions led to examination of the chest. Though we have several times seen tuberculous ulceration of the oral mucous membrane in cases under treatment for advanced pulmonary tuberculosis, at the same time, lesions of diagnostic importance may appear in the mouth before the pulmonary condition has become of sufficient concern to the patient to lead him to seek advice.

In regard to treatment, we consider the general antituberculosis regimen of primary importance, the particular form of local treatment being a secondary consideration.

10. Miller, H. R.: A Guinea-Pig, Rapid Method for the Diagnosis of Tuberculosis, J. A. M. A. **78**: 279 (Jan. 28) 1922.

ABSTRACT OF DISCUSSION

DR. THOMAS E. CARMODY, Denver: Lupus is an attenuated form of tuberculosis. I have seen only two patients; both had skin lesions as well as lesions in the mouth. Dr. Ivy speaks of primary tuberculosis. It is a question in my mind whether these cases are ever primary. Dr. Ivy makes quite a point of the cough. The cough is not characteristic. The majority of these patients have no cough. The local lesion of the mouth is latent, and is seen usually when the patient is nearly dead from the pulmonary disease. Dr. Ivy brings out an important point, the possibility of a mixed lesion. I have seen two cases in which it was a question between syphilis and tuberculosis. Both cases proved to be mixed lesions. One point mentioned frequently is that in syphilis there is no pain. That is not true. Many syphilitic patients have a great deal of pain, excruciating pain. Dr. Ivy speaks of these lesions, showing on extraction of the teeth. I have seen that in a number of cases, mostly when the sputum is loaded with tubercle bacilli. These lesions are characteristically "mouse eaten." I have seen two or three cases in which there was a small lesion on the tongue that looked like a blister. Later this breaks down, becoming ulcerated and "mouse eaten" on the edges. When these cases are not too far advanced, the electrocautery is better than anything else. It destroys all of the tissues around the lesion and goes deeply enough so that healing takes place, provided the condition of the tissues is such they will heal. Many of these cases are so far advanced that ordinary care does not avail.

DR. HERBERT A. POTTS, Chicago: I have recently encountered one of the tuberculous infiltrating types. There seem to be two types of tuberculosis. The one of which I speak was perplexing on account of the differential diagnosis between tuberculosis and carcinoma and syphilis. This was a lesion of the tongue extending rather over the under surface and up beyond the border in the anterior half. It presented quite characteristic surfaces but the whole tongue was a solid mass—it felt just exactly like a carcinoma. Speech was interfered with, and after a great deal of study we finally arrived at the diagnosis of tuberculosis. The Wassermann reaction and other examination proving negative, we scraped the surface lightly and washed it off, getting some of the scraping from beneath the surface in order to avoid the presence of tubercle bacilli within the mouth and lying on the surface. Then we made a smear in this substratum, and there tubercle bacilli were found. We did that twice with the same result. Then this finding was confirmed microscopically. I see no reason why these tuberculous lesions of the mucous membrane of the mouth may not be primary—of hematogenous origin. Of course, they probably would be very rare, but it has been shown that bacilli taken into the stomach or intestines are taken into the lacteals, poured into the receptaculum chyli, and out the subclavian vein. The vast majority are due to the presence of open pulmonary tuberculosis. I have not seen tuberculosis of the gums nearly as frequently as of the mucous membrane of the cheek or the tongue. The importance of guinea-pig injection from these lesions should be emphasized.

DR. GORDON B. NEW, Rochester, Minn.: We must guard against depending on microscopic evidence alone for the diagnosis of tuberculosis about the mouth. Syphilis presents microscopically a picture so similar that it is sometimes difficult to make an absolute diagnosis from the microscopic findings. The use of guinea-pig inoculations is the only absolute method of diagnosis.

DR. E. W. HAYES, Monrovia, Calif.: I should like to ask Dr. Ivy what he uses locally in treatment. We can do a good deal by healing the lesion with a view to relieving the patient's mind.

DR. ROBERT H. IVY, Philadelphia: It is almost like carrying coal to Newcastle to speak of tuberculosis in the presence of Dr. Carmody and Dr. Hayes, but I am glad they found something worthy of discussion. I did not mean to lay any particular stress on the question of pain in these cases from the diagnostic standpoint because I know there is pain in syphilis and no pain in tuberculosis, in many cases. Occasionally, however, the question of pain or no pain does have a little weight, and I believe that in the majority of syphilitic ulcerations there is likely to be less pain than in tuberculosis. I did not say much about treatment. I hoped the discussion would bring it out, as it has. In answer to Dr. New's question, I have used local applications of dichloramin-T, at the suggestion of Dr. Hermann Prinz. We keep the parts clean locally and then apply something to satisfy the mind of the patient. At any rate, the application of dichloramin-T seems to have been of benefit. This, with the curetting and the patient's faithful compliance with general antituberculosis measures, seems to bring about the best results.

THE CONTRIBUTION OF ORAL LESIONS TO THE CAUSE OF CANCER*

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In considering cancer of the oral cavity we find presented an opportunity for the observation of lesions in the early stages of malignancy, and during the so-called premalignant stage which is not given when they occur in other parts of the body. The history of the lesion is subject to the observation and notice of the patient long before it is brought to the attention of the surgeon, and the patient can give the history of his case more clearly than usual. Exciting causes of the initial lesion are usually apparent. As in no other part of the body we find here evidence of a chronic irritation stimulation for tissue overgrowth, whether it is a mechanical, chemical or bacteriologic irritation. Most hyperplasias in the oral cavity can be directly observed as coming from a known source of irritation. The leukoplasias, especially the papillary type, and the various excrescences, which persist for a considerable length of time, can be traced to a definite exciting cause. The infective granulomas, which are frequently so malignant in their termination, though not on the surface, are known to have a bacteriologic ancestry.

In the malignancy of the gallbladder, stones are found in about 85 per cent. of the cases; cancer of the cervix seldom appears where there have been no previous lacerations. MacCarty has found, in studying gastric ulcers 2 cm. or more in width, that more than half show carcinomatous areas somewhere in the margin. In this connection, 40 per cent. of the cases of cancer of the stomach give a definite history of ulcer existing for a time prior to the development of the carcinoma. In view of these facts, it is possible that cancers that apparently develop spontaneously may have such a brief transitory period between the initial trauma and the actual malignant growth as to pass unobserved. MacCarty gives the biologic definition of malignancy as occurring only when the communistic organization of cells is destroyed, and the fundamental biologic reaction as (1) hypertrophy, (2) hyperplasia and (3) migration. Trauma brings about a physiologic cell growth commensurate with a repair of the damage done. Continued trauma produces a continued and excessive stimulation that produces central destruction and marginal overgrowth. This extra demand for cell growth and cell division may sooner or later exhaust its controlling agent, and the unphysiologic and unanatomic hypertrophy may develop into the malignant overgrowth. The cancer cell viewed individually resembles the normal tissue cell from which it springs; but, viewed collectively, the communistic organization does not exist, and we have the abnormal, unphysio-

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logic and unanatomic hypertrophy. The loss of the controlling agent for the division of the nuclei may be so complete that this type of growth rapidly continues to grow and to migrate. If this idea is correct, there is a period when the sterilizing influence of one of the radioactive elements might successfully check the progress, by inhibiting the division of the nuclei until a state of benignancy could be reestablished, or by producing a more permanent sterilization of the nuclei. Continued irritation, partial destruction and environment stimulate a continued karyokinesis of the cellular elements of the hypertrophied tissue. The process of normal physiologic repair is interrupted by this condition. MacCarty refers to the biologic condition of exhausted epithelial areas induced by age, chronic traumatism and irritation, and the activating conditions, as environment of acid areas, especially butyric acid. We have long recognized that acid areas, especially certain types, favor unphysiologic cell division and overgrowth, while the alkalinity of the small intestines, especially the upper portion, does not.

From the standpoint of environment, we find that cancer of the duodenum is rare; yet ulcer in the first part of the duodenum occurs probably four times as frequently as ulcer in the stomach. The majority of the gastro-intestinal cancers occur in the stomach. Of those which do occur in the intestinal tract, about 98 per cent. are in the colon. In a series of gastro-enterostomies at the Mayo Clinic, the following figures are available: In 500 cases of gastro-enterostomy for gastric ulcer, 17 per cent. of the patients died within a period of three and one-half years, which is three times greater than the normal death rate; in ninety-nine cases of combined gastric and duodenal ulcer, about the same ultimate mortality occurred; in 1,600 cases of gastro-enterostomy performed for duodenal ulcer observed for three and one-half years following operation, the death rate was no greater than the normal death rate. While the cause of death was not ascertained in the majority of these cases, because the patients were at their homes, nevertheless, the conclusion may be drawn that the development of a subsequent carcinoma was a factor in increasing the mortality of gastric ulcer cases, whereas the duodenal ulcer cases showed no greater death rate than the normal death rate during this period of time.

Referring again to the percentage of gastric cancer giving a definite ulcer history: In 40 per cent. of the cases in this deep seated area, which is not subject to observation and inspection, we can add the evidence that in cancer of the oral cavity a definite history of chronic irritation can be obtained in almost every case. Cancer of the lip will usually give a history of a preexisting fissure, herpes, or the irritation of the chronic smoker. Cancer of the tongue and cheek so frequently give a history of preexisting irritation from teeth or a leukoplakia as to be almost convincing. The prevalence of cancer in the betel-nut users of the Orient is conspicuous. Figures from the District of Columbia show that in deaths from cancer of the lip in women more than 70 years of age, the colored women, many of whom are accustomed to smoking the clay pipe, show a proportion of 1:4 over white women who are not subject to this type of chronic irritation. This larger proportion of cancer of the lip in the colored women is conspicuous in face of the fact that cancer is less frequent in the colored race. Couch, in this connection, advances the theory that the irritation comes first from the local anemia of the pressure of the pipe stem, and secondly from the chemical and thermal actions. Brewer has compiled a series of 3,889 cases of cancer of the lips and cheeks. In analyzing these figures, he finds that cancer of the lower lip occurs twelve times as frequently as cancer of the upper lip, and that 95 per cent. of cancer of the lip occur in men who have, heretofore, been smokers.

The chronic inflammatory reaction of the syphilitic leukoplakias and the gumma scars frequently are found to precede cancer proliferation. In a series of 148 cases analyzed by Quick, 35 per cent. of the patients gave a history of syphilis or a positive Wassermann reaction. He assumes that a double lesion can exist and the cancer be overlooked on account of the other evidence. We wonder whether the actual fact would not be that the chronic inflammatory irritation really produces the unphysiologic cellular overgrowth, resulting in the carcinoma. Credence should be given to this belief rather than to the conclusions of Quick, in view of the other evidence of the development of sarcoma from the infective granuloma, and of the development of the epulis from a chronic inflammatory area around the socket of an extracted diseased tooth, as well as the evidence of the cancer proliferation in the margin of gastric ulcers. Continued bacterial irritation and the continued proliferation of the contiguous cellular elements in an effort successfully to heal the irritated area may go beyond the stage of physiologic repair and anatomic reconstruction, and, in the resulting destructive process and loss of a physiologic controlling element, we may have cancer developed directly from bacterial as well as from mechanical irritation.

There is another feature regarding malignant tumors of the oral cavity and the face differing from most of the other areas of the body, the fact that metastasis beyond the lymphatic barrier of the cervical region is not common. This fact has been especially emphasized by Crile. Whether this is due entirely to the effectiveness of the lymphatic barrier or to certain characteristics of malignant tumors of this area cannot be definitely stated. We find that the majority of malignancies of this area have an unusually long premalignant course. We also find in this area not only the ordinary types of slow-growing malignancies, that is, those types which are limited in their growth by fibrous tissue barriers, but also some types of local malignancies not found elsewhere. The so-called rodent ulcer of the epiblastic tissue and the epulis of mesoblastic origin are characteristic of this region of the body. The malignancy of these two processes has been questioned by some of the early pathologists, who class the epulis as a benign tumor. The two types of epulides are especially interesting in the study of the malignancy of tumors. One type arises from the myeloid substance of the bone, and the other from the fibrous elements of the periosteum. They appear following the extraction of a diseased tooth, and are undoubtedly the product of the chronic irritation of this diseased process. Clinically, they are malignant, first, because they persist, and, secondly, because the ordinary removal of such a growth is characterized by its immediate return to a greater extent than the initial lesion. Each superficial removal or cauterization brings about a return with greater rapidity and greater size. The epulis which in its early stage contained microscopically but little of the structures of malignancy will gradually, on each return, become first a large round cell sarcoma, and ultimately a small round cell sarcoma. During these repeated exacerbations, the character of the growth is to spread by continuity of tissue, and it does not metastasize to neighboring glands

until late, if it does at all. On the other hand, if it is removed thoroughly in its early stage, and especially if the base is cauterized, it does not appear again locally or elsewhere.

An analogy exists between the chronic inflammatory reaction of the tissues and the neoplastic reaction. This analogy consists in the proliferation of fibrous tissue and the limitation of a neoplastic invasion, which is measured by the same measure that limits the progress of the chronic inflammatory invasion; namely, the amount of fibrous tissue proliferation. We find in and about the oral cavity an unusual degree of resistance for infection, and it is possible that some similar influences not yet recognized may inhibit the rapid growth of the neoplastic processes.

In a general way we may class all diseases under four headings: (1) infections, (2) traumas, (3) neoplasms, and (4) degeneration. If further investigation and observation will place the exciting cause of neoplastic diseases as an end-result of irritation, either traumatic or bacterial, then we can cut down the number to three instead of four general classes. By many it is accepted now that the essential leukemias are really malignancies of the cells of the blood stream, classing thereby the blood as a tissue in which the cells float freely in the body serum instead of being held together by a fibrous network, thereby placing such diseases in the neoplastic grouping.

SUMMARY

Few cases of malignancies of the oral cavity appear without a history of some preexisting oral lesion of either an inflammatory or a traumatic type. These facts and observations should give some credence to the theory that malignancies of other parts of the body may have some type of traumatic or bacterial irritation to cause an unphysiologic end unanatomic overgrowth of otherwise normal cells, disrupting the communistic organization existing in the local area to such an extent that a malignant tumor supersedes normal processes.

THE TREATMENT OF CANCER OF THE JAW WITH THE ACTUAL CAUTERY *

A. J. OCHSNER, M.D.
CHICAGO

During a period of nearly forty years I have had an opportunity of observing and treating a very large number of cases of cancer of the jaw, first as chief assistant of Prof. Charles T. Parkes for three years, and later for four years in the same position with Prof. Nicholas Senn in the enormous surgical clinic these men conducted from 1888 to 1895 at Rush Medical College and the Presbyterian Hospital in this city. Since 1888, I have acted as surgeon-in-chief of Augustana Hospital, and since 1895, of St. Mary's Hospital, and in each of these services many of these cases have come under my observation and treatment—126 operative cases during the period of twenty years from 1901 to 1921.

In 1888, I became greatly interested in the treatment of cancer of the uterus by means of the actual cautery, introduced by Dr. John Byrne of Brooklyn, which Professor Parkes employed regularly in hopeless cases of uterine cancer. To our amazement, a number of these patients, in whom the growth was so far advanced that it seemed they could live but a short time, certainly less than two years, remained well for years without recurrence, some being well at the present time. This fact convinced me that the action of the cautery destroys cancer tissue, or cancer infection, far beyond the tissue actually removed. It seems as though possibly the severe heat applied to the malignant tissue may have produced antibodies, which in turn affected the infectious material which had already been carried beyond the reach of the direct destruction caused by the heat. At any rate, our observations confirmed all of the well known claims of Dr. Byrne. As a result of these observations, I came to use the actual cautery in the treatment of cancer whenever this was possible.

At that time, cancer of the upper jaw was looked on as practically hopeless, and cancer of the lower jaw, though treated by means of a very mutilating operation with extensive excision, resulted in permanent cure in only a very small percentage of cases. One of my earliest patients, whose case had been declared hopeless by some of the most experienced surgeons and by the professor of pathology in one of our best universities, who made the microscopic examination, is alive and well today after a period of nearly thirty-five years, while the professor and all of the surgical colleagues who expressed an opinion have long gone to their reward. In this case, I first applied a plan which I have practiced ever since and which has been followed with success by many surgeons who have visited my clinic.

We burn away tissue until we are certain that we have destroyed all of the diseased portion, and then we burn away as much more as we feel we should have to destroy after the first recurrence, without regard to the deformity or to the plan that we have to employ later on in our reconstruction, or to the trouble our dentist friends will have in providing a proper artificial substitute for what we have destroyed. It is quite remarkable how cleverly they improvise useful and esthetic substitutes for our ruthless destruction of tissue.

By far the most useful instrument which we have employed for carrying out this operation is a small copper soldering iron about 1 cm. square and 2 cm. long, which we heat to red heat in a gas flame such as tinsmiths employ. The heat carried by this metal when red hot is enormous, and reaches some distance beyond the tissue actually destroyed. It seems wise to hold the iron in one place for a minute or longer in order to cook thoroughly the tissues rather than simply to pass it over the surface back and forth, because although the latter process will destroy the cancer tissue on the surface quite as perfectly, the heat cannot penetrate to the same depth. Consequently, if the cautery is not held in one place long enough to cook the tissues thoroughly, there may be small projections of cancer tissue, or slight invasions of cancer infection, which may escape destruction and may serve as foci from which recurrence may have its beginning.

In order to prevent the setting free of cancer infection, we avoid the use of the knife or chisel, even when the growth is extensive or when it invades the bones to a marked extent. In these cases, we first cook the tissues, including the bone, and then cut away the tissue that has been rendered harmless by the application of this tremendous heat. After cutting away all

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of the apparently diseased tissue that had previously been cooked, we invariably apply the red hot soldering iron again in order to make sure that no particle of infected tissue may remain. Every slightest portion of surface is gone over. One cannot be too careful or too thorough. One must especially guard against the very common error at the primary operation of going only a slight distance beyond the growth. Whenever possible, one should burn away the entire growth and 2 cm. of tissue beyond in every direction. In my own experience, several lives have been lost from recurrence in cancer of the upper jaw because I was unwilling to sacrifice the eye in the primary operation; while patients with a similar condition are still alive and free from recurrence after many years, because I avoided this blunder. By employing the methods of reconstruction illustrated by Blair and Galli and others, one can obtain results later on much less repulsive than one would expect after these mutilating operations.

It seems worth while to mention the subject of removal of a portion of the tumor for microscopic examination. I have met a large number of patients who later lost their lives as a result of metastases caused by the removal of a small portion of a malignant growth for microscopic examination previous to the operation. We all know what frightful consequences result from cutting into a melanotic nevus.

In many cases of cancer, the excision of a small portion of the growth for microscopic examination has precisely the same effect. It removes the natural barrier that seems to protect the patient against liberating the cancer infection and permitting the formation of metastases. Unfortunately, in my experience, this form of metastatic infection due to removing a portion for microscopic examination has usually occurred in patients in whom the growth at the time of operation was not at all advanced and in whom the free removal would most certainly have resulted in a permanent cure.

There is, however, a safe method of obtaining a portion for microscopic examination in case the surgeon is too stupid or too inexperienced to recognize a malignant growth in any individual case under consideration. A portion sufficient for microscopic examination may be removed from the tumor with the electric cautery, and the raw surface thoroughly cooked with the soldering iron without fear of dissemination. Before thorough microscopic instruction was universal in medical schools, it was a practice of those who were familiar with the use of the microscope to lay great stress on the importance of microscopic examination before operation, because this gave them a kind of exclusive position, a kind of monopoly on being thoroughly scientific and quite above the common herd of surgeons.

Being intensely interested in microscopic study of tissues, which I taught and practiced daily from 1882 to 1891, I made a practice of comparing the gross and the microscopic diagnosis of malignant growths in my own practice and in the clinics of my chiefs, Professor Parkes and Professor Senn, and for two semesters of Professor Billroth while I was in daily attendance at his clinic. In only one case during the two semesters did the microscope fail to confirm the diagnosis Professor Billroth had made from the gross appearance of the specimen removed, and that was in a case of blastomycosis or granuloma, which had not been described before 1887, when my observations in Billroth's clinic were made. During the years 1888 to 1895, I, myself, prepared and studied microscopic sections from every tumor removed by Professor Parkes and Professor Senn, and here again I found that their diagnosis from the gross appearance was practically always confirmed by the microscope.

Since that time I have, personally, with my staff of assistants, studied microscopic sections of every tumor I have removed, and have frequently compared the diagnosis made by these assistants with the microscopic findings, and have found that the older assistants, who had been in our service a year or longer, almost invariably made the correct diagnosis from the gross appearance of the tissue removed, together with the history of the case. I am convinced that, in case of doubt, the growth should always be removed with the cautery, never with the knife, and the diagnosis confirmed by microscopic examination afterward.

It is quite possible that the same results can be obtained by the use of diathermy, because the tremendous heat developed by this method should theoretically be quite as effective as the heat produced by the soldering iron. Judging from the extensive reports of Clark and others, this seems to have been established in practice, but my personal experience with this method is too limited and too recent to warrant an expression of an opinion.

Our plan of conducting the anesthesia seems to be of sufficient importance to deserve mention, because we have had no cases of postoperative pneumonia since introducing this method. The operation has been very smooth and uninterrupted by mishap or disturbance due to the anesthesia.

The patient is given ¼ grain of morphin and $\frac{1}{150}$ grain of atropin from one hour to one and one-half hours before the anesthesia is begun, and one half of this amount is given half an hour before anesthesia is begun. Then the patient is anesthetized very thoroughly, but very slowly, with ether by the drop method, the patient being in the horizontal position. When the anesthesia is complete, the head of the table is elevated to 45 degrees, and the anesthesia will then be perfect for from one-half to one hour without the use of any further ether, because of the anemia of the brain caused by the elevated position of the head.

This time will suffice to complete the operation. In the meantime, the patient has exhaled a large portion of the ether previously inhaled, and when the head is lowered, the patient awakens almost at once. The total amount of ether required is greatly reduced and by elevating the head of the bed or permitting the patient to sit up in bed with a head rest, all danger from hypostatic pulmonary congestion and pneumonia is eliminated. There is, of course, considerable danger from postoperative hemorrhage in extensive cases, but as all of these cases are absolutely hopeless without operation, or with a more limited operation, it is well worth while to take the additional risk.

The use of the cautery treatment as described above does not preclude the use of radium or the roentgen ray. In fact, for several years we have systematically given these patients intensive roentgen-ray and radium treatment either before or after the operation, and in certain cases both before and after the operation.

In other cases, when it has seemed advisable, we have placed a row of radium needles entirely round the growth before removing the growth with the cautery.

The treatment with radium and the roentgen ray has been under the direction of Dr. Henry Schmidt, who has made a special study of this subject, enabling him to determine the amount and time best suited for the individual case.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. PETTIT AND OCHSNER

DR. HARRY P. RITCHIE, St. Paul: Dr. Ochsner's paper brings up a subject of ever increasing interest to me, fitting in as it does with other work in this location. We have a number of patients that came down to the Community Hospital with enormous neglected malignant growths in this locality, and the question arises whether it is worth while doing anything for them. They often look worse than they really are. The gross appearance is due in many instances to a superimposed inflammatory process. I have established two or three things. The first is, the principle of starvation of this growth, indicating the routine initial ligature of the external carotid artery. Many years ago I think this was discussed, and the starvation of the growth was presented as the primary principle in the treatment. Of course, this was inefficient, because it left the growth in situ. It is easy to tie the external carotid, and the reasons are: (1) It starves the growth; (2) it facilitates the immediate operation, and (3) it minimizes the danger of secondary hemorrhage. The old operation with the keen knife and bone forceps went very well, but we recognize that that is not the proper thing on account of the possibility of grafting malignant tissue on a new surface. I believe that the cautery in some form is necessary. I have a cautery of sufficient current to carry a white hot heat and not cool in the tissue. With this I am often able to excise this tissue with a white hot knife. I think the practice of cooking the growth all right and the only means possible when the growth arises in the antrum, and I do not want to present this as a substitute; but it seems to me that if we can make a surgical excision and minimize the danger of grafting, it is a reasonable proposition. I am not always able to differentiate tumors originating in the antrum from those arising from the process and its tissues. Every effort should be made to do so, but if it should rise in the process then surgical excision is quite possible. I am never quite sure whether the first operation is complete, so I establish this rule, that these cases be gone over again with the cautery knife and iron within two or three weeks. I thought that I would never again use scopolamin or chloroform, but the combination in these gross cases warrants their use. Scopolamin and morphin can be given about two and a half hours before and secure a sufficient inhibition of the sensibilities. The operation can then be carried on for two or three hours by obstetric chloroform anesthesia with a minimum danger. I also believe that these patients should be operated on with the head down and thus lessen the chance of inspiration pneumonia. My present attitude toward radium and the roentgen ray is that these cases are primarily surgical and that all other agents are accessory measures. I do not advocate the use of the white hot knife, but I believe that many cases are amenable to surgical excision by bone forceps and white hot knife, and that such procedure goes wider than any heat penetration.

DR. GEORGE V. I. BROWN, Milwaukee: During the course of a visit to Rochester with Dr. New, it appeared that many cases were coming there just as I have had them come to me that we knew could have been saved if the surgeons who had treated them in the beginning had been imbued with the idea that they could be and should be cured, and with this in view had gone about their work in a definite and thorough manner to obliterate completely all traces of the growth at a sufficiently early time to permit such treatment. Approximately sixteen years ago I first observed the result of Dr. Ochsner's treatment of cancer in the region of the maxillary sinus. This patient had been operated on before he came to me, and I again operated, performing, as I thought, quite an extensive and thorough operation as we looked on such operations at that time; but he returned a few months later with a rapidly progressing growth in the same region. All I seemed to have accomplished was to increase the rapidity of the growth. I then referred the patient to Dr. Ochsner. He burned out the growth with hot soldering irons, as he described in his paper. The growth required burning out a second time a little while later. Fifteen years afterward this man came to my office to consult me about something else, and I believe that he had forgotten that he ever had cancer, that he was near death or that he had undergone what appeared to be one of the most brutal operations I ever saw, but which in reality was the most humane treatment he could have been given for such a growth. I know that Dr. Ochsner has been curing them steadily by this method ever since, but it should be remembered that sixteen years ago not many men would have had the courage to do such an operation as Dr. Ochsner then performed. I have since then had my share of success also, and many of my patients are still living. Dr. New at the Mayo Clinic has had a very large number of these cases, all with about the same history. Some of these patients he could not save, just as I have lost some that could have been saved if they had had proper treatment earlier. It therefore seems as though we might be able to accomplish a useful purpose by spreading the gospel of the idea that these cases can be cured as Dr. Ochsner has described; in many cases, permanently and thoroughly.

DR. J. F. PERCY, Los Angeles: It is significant that the medical literature of the world in the last year and a half has contained a gradually increasing number of references to the cautery heat treatment of cancer. Heat cauterization was the first successful treatment of cancer used by man, and no other method has ever successfully taken its place. It always comes back; it is coming back now for the reason that cancer abhors heat. Dr. Brown spoke of the brutality of Dr. Ochsner's technic, but Dr. Ochsner will tell you that the patient did not suffer from the treatment. Cooked flesh tells no tales. The cautery knife puts an aseptic leather cap on the end of every nerve that it severs, and there is nothing left with which to have pain; consequently no morphin is required. More than this, there is no shock, unless too much blood has been lost, and cautery knife excisions of tissues are usually bloodless. Under spinal anesthesia, I recently did an excision of the hip joint with the cautery knife. The patient was a badly devitalized man, suffering from a suppurating and neglected sarcoma of the femur. I removed all of the muscular structures from that side of the pelvis, except the skin for flaps. The sciatic nerve was severed with the hot knife; indeed, the whole operation was a complete cautery procedure. I saw this man two hours after he had left the surgery, and he was comfortably reclining in his bed, reading a morning paper and smoking a cigaret. He has gone on to an uninterrupted operative recovery. Dr. Ochsner mentioned Dr. John Byrne of Brooklyn. Byrne was the first surgeon to use the cautery knife scientifically. Indeed, he was one of the first, if not the first, who made a successful electric cautery knife. He excised the lesion, usually a cancerous cervix, in a most dexterous manner with his cautery. Then he did what is not done today by those who are triyng to use the cautery—he applied a dome shaped electric heating head to all the structures that remained until they were made like "horn" or of the consistency of leather. In this way he obtained heat penetration, and it is this low degree of heat that has the greatest penetrating power, and therefore is the most effective in the destruction of the abnormal cell. This is the essential thing in the Byrne technic, which is missed by many surgeons. This effective penetration of the heat accounts for his 60 per cent. of uterine carcinomas in which he reported the patients as living over the five year period. That he actually obtained these results in his cases of uterine cancer has never been questioned.

DR. HENRY SCHMITZ, Chicago: Radium and roentgen-ray treatment in cancer of the jaws should never constitute the sole treatment but be regarded an aid to surgery. Radium has a local intensive effect and therefore should be evenly distributed throughout the tumor mass and its periphery by the use of steel needles or emanation seeds. Roentgen rays are rather extremely diffused and therefore may be applied to large areas; for instance, the glands of the neck and submaxillary regions. The modern 200 kilovolt roentgen ray, heavily filtered, should not be used in jaw cancers, but preferably the 120 to 140 kilovolt roentgen ray filtered with 0.25 or 0.5 mm. of copper. The latter method insures greater absorption of the rays which, of course, is essential for success. We also should avoid the destruction by rays of important secretory glands, such as the parotid and the sub-

maxillary. We should save at least one of each pair. If we do not do so, the patient will evince a wasting away leading to death, though the carcinoma may have been destroyed.

DR. CARL BECK, Chicago: We know that leukoplakia, and all mouth infections especially, are leading to the development of carcinoma; they must be looked after as early as possible. One of the most important things is the education of the public along these lines. Much interest is being awakened by the Society for the Prevention of Carcinoma in going abroad and teaching the people how they should take care of the mouth cavity. I am much interested in Dr. Ochsner's theories of carcinoma. There is great possibility that within the near future somebody will find the cause of carcinoma. Work is being done all over the United States and Europe. Something will come out sooner or later. I hope we shall have the great glory that it will be an American, and we ought to further in every way and encourage the study of these scientific workers.

DR. THOMAS E. CARMODY, Denver: One point that means a lot is the lightning swiftness of carcinoma action. I had a case some years ago in which I know I implanted carcinoma from the teeth into the jaw. That happens frequently without the cautery. In these cases of the maxillary sinus we have something different than in other places, because of the opportunity of increasing it in the nose. The complete cooking Dr. Percy spoke of necessarily destroys some tissue that we should like to save, sometimes destroying the eye on the infected side, as happened in one of my cases. Dr. New reports that this happens only when the orbital plate is involved, although in this case the orbital plate was not involved. The method I use is similar to that of Dr. New, except that he does not use the Percy cautery, but uses the soldering iron. I fill it with radium in the case in which there is any other complication, and especially when the palate is involved. Dr. Percy made another point that I think is important, and that is holding the iron in one place so as completely to cook and drive off all the moisture because, if we do not do that we do not destroy it. There is one point, though, that troubled me a great deal, and that is that possibly I do not use the technic correctly in cases of cancer of the lower jaw.

DR. H. M. GREENE, Portland, Ore.: These discussions have laid stress on taking care of cancer in an effectual way after it has arrived. While this is extremely important and essential, I think we, as physicians, owe it to our patients to try to discover chronic irritants and infections, syphilis being a frequent one, and endeavor to remove them or treat them before the cancer begins, since they appear to be etiologic factors in its production.

DR. A. C. SELLERY, Long Beach, Calif.: I was glad to hear Dr. Schmitz say that radium and the roentgen ray should not be used primarily in these cases. I have seen two cases in which necrosis of the jaw was produced with entire destruction of the jaw bone in the neighborhood where the radium was used. I believe that it is unwise and unsafe to use radium in the neighborhood of bone. I believe that the use of the cautery in attacking cancer is leading to the only satisfactory work that ever has been done, and I believe that Dr. Percy's technic is not sufficiently or satisfactorily appreciated. His work has been a revelation to me.

DR. GORDON B. NEW, Rochester, Minn.: I have been particularly interested in the treatment of malignancies of the upper jaw and antrum, and have been using a cautery and radium with very satisfactory results. I use a water cooled retractor to protect the lips and tongue. The growth is attacked either above the alveolar process or through the palate, and soldering irons are used at slow heat to remove the growth. In THE JOURNAL, May 8, 1920, I reported the treatment of eighteen cases of malignant tumors of the antrum by this method. About 50 per cent. of those patients are still well. In the sarcoma group, radium alone is about all that is necessary, while in the epithelioma group thorough cauterization is the important thing. I believe that radium has done more to increase the mortality in cancer about the nose, throat and mouth, owing to the fact that it is being used in conditions in which it is not indicated, and radium is being used by persons without special training. Thickened leukoplakias and so-called precancerous conditions about the mouth are being treated with radium, which sometimes heals over the surface, and then the growth recurs as an active squamous cell epithelioma. Radium is a very important adjunct in the treatment of malignancies, but the selection of cases for its use alone and its use along with surgery is very important.

DR. JOSEPH A. PETTIT, Portland, Ore.: Unquestionably we all agree that heat in some form or other is a logical means of inhibiting malignant growth. In fact, heat is the first therapeutic agent mentioned in early literature; it is mentioned in the Old Testament for the cure of certain morbid conditions. The question may well be asked, what is heat? Is it not true that heat, radium and the roentgen ray present modified forms of radioactivity? Heat unquestionably destroys malignancy. It penetrates into the normal tissue, but it has been proved that normal tissue cells stand more heat than malignant cells; that is, the normal tissue cells will recuperate or recover. What does heat do, and what is heat? These are the things we still have to consider from the point of view of the practical results obtained by their use. To my mind it has always appeared that heat, the roentgen ray and radium come in a general way in the same classification. It is stated that the roentgen ray acts on the whole cell, while radium has a selective action for the nucleus and not so much on the protoplasm. We realize that the nucleus is the basis of cell division and growth. The perfection of roentgen-ray technic so that bigger doses and volume of the ray can be given with safety should materially aid in the follow-up treatment of malignancy. The work of Byrnes went unrecognized and unappreciated for many years. Dr. Percy, I think, has done a great work for humanity in the way he has put the cautery on the surgical map, and we find as we look back over the years that Dr. Ochsner and others have been making practical but undemonstrative use of the same principle, that Dr. Percy's claims are logical. Dr. Ochsner follows up the cautery excision by radium and by the roentgen ray, and I think that Dr. Schmitz' comment regarding the action of the two is quite correct.

DR. ALBERT J. OCHSNER, Chicago: There is a difference between the heat that normal tissue and that carcinoma will stand. If a piece of cancer tissue is heated up to 160 F., it will not grow if transplanted. A piece not so treated will result in a cancer transplant. Dr. Brown's statement that the incomplete operation increases the growth is very true. I have seen a malignant growth in the jaw that did not amount to much grow like wild fire after partial removal. Therefore, the operation must be done thoroughly in order not to do harm to the patient. Dr. Percy's insistence that penetration must be deep is of the greatest importance. That is the reason why he applies the heat as he does. The tissues must be heated long enough so that either the cancer or the infection, whichever may be the cause of the growth, is killed. I believe that Dr. Schmitz' insistence on the fact that the roentgen ray or radium must be used as an aid and not as a primary treatment should be borne in mind and emphasized thoroughly because as an aid it certainly has tremendous value. I believe that every one who has had much experience with cancer of the mouth will confirm the fact that the mucous patch is potential cancer. In fact, in my own experience in smokers who had leukoplakia and have continued to smoke I have seen almost invariably that cancer has developed. Concerning the cause of cancer, Dr. John Nuzum has been working for seven years with a filtrable micrococcus, which he finds in human cancer, which he can inoculate and which will produce cancer in mice and dogs in a certain number of cases. He is still at work, and will probably have to take a number of years before he can get all of the elements worked out so that the proof will be satisfactory; but I think he is on the right track. Dr. Carmody's reference to the pain in the lower jaw can be explained by an incomplete destruction with the cautery of the inferior dental nerve. I have many times removed an entire upper jaw with the cautery and the patient was perfectly happy and wanted something to eat within a few hours afterward. The cautery stops the pain. There is no other method of doing the opera-

tion with so little pain. Prophylaxis is of the greatest importance. That is where the dentists do their greatest work. I have not seen a single case of cancer in the mouth in which there has not been irritation from causes that could have been relieved had they received early attention, and in every case there has been infection in connection with this irritation. The idea of infection, I believe, is illustrated more clearly in cancer of the mouth than in cancer in any other part of the body. There is an open and an unclean surface. Dr. Nuzum's coccus is found frequently in unclean things, and as a result of this these open surfaces are constantly infected. There is one observation he has made which seems especially significant. He has to reinfect tissues with the same micrococcus over and over again to produce cancer in animals, and I believe that in the mouth we have first irritation and then infection and, as a result of continued repetition of these conditions, cancer develops.

VALUE OF SELECTIVE VOLUNTARY EXERCISE

IN RESTORING CERTAIN DISEASED OR TRAUMATIC JOINTS *

HALBERT W. CHAPPEL, A.M., M.D.
LOS ANGELES

The partial or complete loss of function following infectious arthritis is due to changes in the structure of the synovial membrane, the cartilage and the bones; to periarticular changes, or to changes in the muscles that control the movements of the joints; to any two, and not infrequently to all three.

The synovial membrane is usually thickened, and it is not uncommon to find large fringes and villi. The cartilage which is softened during the acute stage is thinned and occasionally entirely absorbed. In the long standing cases, the ends of the bones have become smooth and very hard, with an accompanying atrophy of their shaft. At the margins of the joints, bone proliferation forms irregular nodules, varying in size from that of a pin head to a triangular mass nearly an inch in length.

The periarticular tissues show infiltration and swelling, so that the enlargement about the joint is more often due to that than to bony changes. Sometimes an acute bursitis, or one that has become chronic with the deposition of lime salts, is the only obstruction to function subsequent to an infectious arthritis.

Of the extensive secondary changes, those of the muscles and nerves are the only ones that will be considered at this time. Muscular atrophy is common and may appear with great rapidity. Contractures may follow, and not infrequently the joint becomes fixed in a position of flexion. Neuritis and trophic disturbances may be a troublesome sequel.

A joint near an area of chronic osteomyelitis has partial or complete loss of function, because of an accompanying inflammation, acute or chronic, in the articular and periarticular tissues, and the frequent necessity for prolonged complete immobilization. Adhesions thus formed becoming thoroughly organized before mobilization is permitted, and marked muscular atrophy, although there are no apparent changes in the joint structure, frequently present a troublesome problem.

Following sprains, strains, simple and compound fractures near or into the joint, dislocation, or rupture of periarticular tissues, there are varying degrees of stiffness. This limitation of motion is due to an inflammatory reaction about the joint, with apparently no injury to the bones or cartilage. Strong bands of fibrous tissue were allowed to form in the lacerated tissue as the result of the effusion of blood and serum, or by prolonging rest until the obstructive bands matured, or by adding injury, by too early passive movement, to the existing active state of repair.

Passive motion is contraindicated in restoring function to the foregoing types of inflammatory stiffened joints. Either disease or injury destroyed the joint motion, and no effort should be made to restore this motion until the disease or mechanical obstruction has been completely overcome.

Gillette once said that "Nature's 'first aid' to the injured or inflamed joint is neuromuscular spasm." It is not only the joint's first aid, but its constant protection until a complete painless range of motion has been restored; and its presence is the chief contraindication to passive motion. Normal muscle is contracted or relaxed by volition, and these are two opposite physiologic states, so that no muscle can be in a state of physiologic contraction at the same time that it is physiologically relaxed, as the voluntary stimulus which causes contraction of one group of muscles also causes relaxation of its opponent. The action of the latter should be thoroughly understood before the former is treated. Then the antagonist can be taught not only to relax but to limit its action, thus leaving the weakened muscle free to act as soon as it has power to do so; and this power cannot be regained as long as the muscle is subjected to a strain or is in any way deprived of its full opportunity for movement.

Therefore, it is by a proper combination of rest and muscle action that a joint recovers its normal range of motion. Rest for the elongated muscle means stretching for its contracted opponent. As definite structural changes have taken place in both muscles, the lengthening of the contracted muscle should be simultaneous with the shortening of its stretched opponent, so that there will be a restoration of normal tone of the opposing groups, when the affected muscles have completely recovered.

As the joint exists for the muscle, the only way in which its motion should be obtained is through a neuromuscular mechanism which controls voluntary movements, so that the one thing essential to recovery is voluntary effort on the part of the patient. It is of utmost importance to impress on him clearly the fact that his recovery depends entirely on his own persistent and accurate effort. As purely voluntary movements rarely allow a range sufficient to cause pain, the patient may repeat the attempted movements immediately and at frequent intervals during the day.

It is not a greater range of motion attempted passively that causes pain and a more limited movement, but the neuromuscular spasm that results from any effort to handle the joint beyond a very limited range. The patient apparently has no control over this spasm. I have repeatedly, gently and slowly as possible, attempted to increase slightly the range of motion of different joints. Each time, after meeting strong resistance at several degrees less than the patient had just voluntarily moved the joint, I discontinued my

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efforts, and the patient at once continued the movement easily and painlessly to its limit. Much damage could have been done had the effort continued even to the range of voluntary movement.

Actively flexing and extending up to the point of pain not only allows the inflammation of the joint to subside but gradually restores complete function, while passive motion combats Nature's healing and proportionally lessens activity.

It is well known that variations in temperature affect both the extent and the variation of muscular contraction. As the temperature of a muscle is raised, a given stimulus causes proportionally greater contractions, so that maximum activity may finally be obtained without increasing the effort. There is also an increase in the amount of blood in the heated muscles and a corresponding change in the rate of blood flow. Therefore the application of heat, followed by massage, which greatly accelerates the flow of blood through an extremity, should precede the voluntary use of the muscles.

As there is in many cases practically an entire forgetfulness of the coordinating path and muscle and joint sense, it becomes necessary to begin with the slightest voluntary movement, and reeducate all muscles controlling the disabled joint. Should there be a tendency to spasm or deformity, splinting must be continued at night and for many hours during the day.

Encouragement is the greatest stimulant to maximum effort in restoring function to a diseased or traumatic joint. This may best be obtained by appliances that accurately record every movement, which is then graphically charted and kept under constant observation by the patient. No other stimulus causes so powerful a reaction as that of persuading the patient that he could at least make as great an improvement as he did the preceding day. Failure to record progress a number of times in succession is strong evidence that a change in treatment is necessary.

Care should be taken to select competitive and graduated exercises for each case, as no two joints require the same movements. Frequently two, rarely three joints, of the same extremity have been damaged, presenting a more troublesome problem. An elbow or a shoulder is very dependent on the normal use of the hand and wrist. Strong flexion and extension of the fingers, together with pronation and supination of the hand, are very necessary to manipulate apparatus for exercising the elbow or shoulder.

A soft rubber ball, about the size of a baseball, allows freedom of motion and moderate resistance to the weakened flexors, and through its elasticity an aid to the extensors. This may be used frequently during the day; and, alternated with a piece of apparatus, not only gives opportunity for exercise, but also measures the length of movement so that any improvement may be accurately noted by the patient. This apparatus has steps for the fingers to climb when extension is desired and to descend when flexion is limited. The palm of the hand remains on the base of the apparatus near the first step. It also contains six pegs in a straight line a short distance below the steps and one peg by the side of the steps, which contains six small rings. When flexion has progressed sufficiently, each ring is grasped and placed over one of the pegs, and then all are returned to the one peg. The thumb, with each finger, is finally used for this exercise.

The hand dynamometer has proved very useful in determining the increase in the power of flexion.

As a variety of exercises is necessary not only to continue muscular development but also to keep up the interest, hammering tacks, then nails and finally putting screws into and out of soft wood accurately registers both the increase in speed and the returning power to the disabled muscles.

A correct record of the return of extension and flexion of the wrist, also of radial and ulnar flexion of the hand, may be obtained by the following apparatus: A board supporting the forearm and extending to just below the tip of the fingers, broadened at the lower end to include a normal range of flexion and extension, contains a cuff holding the forearm securely to it and allowing freedom at the wrist joint. An indicator fastened to a finger will record any improvement on the dynamograph at the lower end of the apparatus. This is arranged so that gravity may be eliminated, if desired.

When the elbow has partially or completely lost its function, the patient rapidly learns to substitute shoulder movements, which compensate largely for the disability. It then becomes exceedingly difficult for him to concentrate on purely elbow movements, especially those of flexion. When the power of contraction of the fingers and pronation and supination of the forearm alone has been regained, the saw is a very valuable aid to flexion and extension. Holding the elbows tight against the side of the body, hands in supination, the wand with the aid of the normal elbow affords an excellent means for flexing and extending, and later light dumb-bells, the two kept as closely together during the movement as is possible, have proved of great value, especially as each movement may be accurately recorded and greater efforts for improvement stimulated.

Two semicircular pieces of metal, 9 inches long, broader and deeper as they approach the elbow, riveted together so as to allow easy movement and to one side of which is attached a dynamograph on which every degree of motion from 0 to 180 degrees is registered, may be used so that the patient can observe the record of each movement, thus stimulating the desire to improve at least one degree each day.

Such occupational work as sewing on object cards, weaving baskets, and rope splicing with the elbow held tightly to the side are excellent means of obtaining a return of all the desired movements at the elbow joint.

A finger ladder with spacings 1 cm. apart, and progressive numbers on each space, affords an excellent opportunity for abduction and flexion of the shoulder. Although working against gravity, the fingers are a great aid to the weakened shoulder muscles. When the hand can be raised above the level of the shoulder, the use of the stall bar affords an excellent opportunity for stretching, and also of recording progress. The horizontal ladder, horizontal bar and the rings afford a very good opportunity for stretching adhesions not only around the shoulder, but any that are preventing extension at the elbow.

Of the usual exercises employed for strengthening a mechanically weak foot, the use of marbles, a soft rubber ball, and a double incline, made at an angle of about 45 degrees, usually produces rapid results. Because of the excellent use of the hip joint, it is

frequently difficult to obtain flexion and extension of a partially or completely disabled knee joint.

The following apparatus has given most pleasing results in a number of stubborn cases: A pendulum about 3 feet long with adjustable weights, to which is attached a foot piece, with a joint to be used if desired, providing a tread motion, may be adjusted to aid flexion and extension at first, and later to resist the movements as the muscles regain their power. This also provides a flexion and extension exercise for the ankle and hip. A similar result may be obtained by a stationary or movable bicycle or tricycle. The stall bars with the feet one or two rungs below the hands provide another means of obtaining similar motions. A rubber sling, suspended from the shoulders and fastened to the shoe, gives a nonweight bearing extremity a chance to increase not only the power, but also the range of any joints of the lower extremity, and is especially good for that of the knee. Stepping over the rungs of the horizontal ladder a few inches from the floor, but the height of which can be increased with improvement, compels flexion and extension frequently when other means have failed to give further improvement.

Competitive games, the punching bag, chest weights, and medicine ball provide new and interesting ways of continuing the desired movements, when interest is beginning to be lost in the more formal exercises.

There are many other types of apparatus and kinds of exercises not mentioned here that would accomplish the same results. Those enumerated have been chosen because a duplicate of the apparatus may be easily obtained by the patient, allowing an exact reproduction of the exercises at home which have been so carefully given in the gymnasium of the physiotherapy department.

Selective voluntary exercise, when chosen as the method for restoring certain diseased or traumatic joints, not only gives the improvement that could not otherwise be obtained, but also prevents the disastrous results that so frequently follow any forcible attempt to regain function.

ABSTRACT OF DISCUSSION

DR. ARTHUR L. FISHER, San Francisco: I want to emphasize most of the points brought out, and particularly the retardation that can be done by the indiscriminate use of passive motion. If one is trying to increase range of motion in a posttraumatic or inflammatory joint, one cannot do it with passive motion. The use of voluntary exercise is a valuable adjunct in the treatment of all of these joints. I am not an advocate of physiotherapy as it is at present carried out. It is quack medicine. I say it advisedly, after a good deal of thought, because there is little or no experimental and scientific basis for it. We don't know what an electric current will do in the animal or human tissue, what heat rays do, or whether massage increases the amount of blood in a part. It does increase the amount of blood superficially in the skin, but is there a reciprocal relation between the muscle and the skin, much as there is between the splanchnic area and the skin. Weir Mitchell, in some of his original contributions, cites cases or types of cases in which he states that the blood count is increased following massage; but if his counts are examined before and after massage, it will be seen that there is practically no difference between them. The whole subject of physiotherapy as carried out is on an empiric basis. It is something that is being used while the patient gets well, but we don't know whether the patient recovers any more quickly or more slowly on account of it. My own impression is that many will recover a great deal more slowly. They like the treatments, and they take to them readily, but I think many things—particularly passive motion, as Dr. Chappel has pointed out—retard rather than aid.

DR. CHARLES LEROY LOWMAN, Los Angeles: I was glad that Dr. Chappel gave the sequence of events in the handling of the joint, in that he gave the heat followed by massage, and then active exercise. It is an unfortunate circumstance that various therapeutic lights and other kinds of heating apparatus are recommended to the general practitioner, with statements that the orthopedic men and others use them for treating painful joints of various kinds. The general practitioner ordinarily does not know much about the physiology of the injured joint. The danger lies in the fact that the patient feels better from the application of heat to the joint, because he gets a neural reaction from it. But the application of heat dilates the blood vessels, brings the blood into the part, and results in the congestion and swelling of the linings. It is just as bad to produce a physiologic congestion as a pathologic one. We are doing the same thing as congestion of trauma does. Heat should not be applied to a joint unless it is followed by massage or by a splint and then active exercise. The active exercise should not come immediately after the heat.

DR. EDGAR L. GILCHRIST, San Francisco: I agree with many things that Dr. Fisher said; however, I believe he is swinging the pendulum too far to the other side. Doubtless physiotherapy has been overdone. There is probably nothing in this world that we take up anew or revive that, in the first wave of enthusiasm, is not overdone. This, though regrettable, is only human. Physiotherapy has been sadly neglected for many years. The war revived it, and many enthusiasts have expected to accomplish too much with it and have frequently used it when it was not indicated. That physiotherapy is valuable when intelligently directed there can be no doubt. I think that often we give our treatments too frequently; that is, daily, when it would perhaps be better to give them every other day. In the treatment of joints we should be on the alert to observe any rebellious reaction that may be produced and immediately stop all physiotherapy until the reaction has subsided, which will usually require about four or five days.

DR. H. W. CHAPPEL, Los Angeles: Dr. Landnecker of San Francisco uses the photographic method for checking the progress of all his cases. When we are dealing with an extremely difficult joint, if we take a photograph before we begin, others at various times during the treatment, and finish up with a photograph, there will be an accurate record of any improvement that has been made.

The Teaching of Mountebankery.—At Davenport, Iowa, there is a school which has become the most gigantic institution in the world for the teaching of mountebankery and which commands attention as one of the most pretentious pieces of fakery we have ever witnessed. It gives men with no education a pseudo-medical veneer which enables them to plunder the sick; it teaches them to despise the serious works of our greatest masters, to rely upon the appalling ignorance of our masses, to use every means of salesmanship in order to reach them; to spread a venomous propaganda against the medical profession; this school boasts of the "prettiest printery in America," of a powerful radiophone which broadcasts lectures on chiropractic "education" every afternoon, and of an organization utilizing every political means to gain legal recognition of their sect in the various states of the country. . . . Day and night under the very eyes of the medical profession, laws are being enacted which allow these charlatans to practice medicine on a level with physicians, to treat all kinds of diseases, including contagious ones, to sign death certificates, and there are laws which permit licensing boards to examine the applicants. There are now 5,000 chiropractors in the field and Palmer says, "I look to see the time when this institution will graduate 25,000 students a year."—Thewlis, M. W., *J. Indiana M. A.* **16**:282 (Sept.) 1923.

THE MORE PRACTICAL FUNCTIONAL TESTS OF THE LIVER*

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The liver is an organ of the greatest importance in the body economy. This is readily seen from its considerable size (being the largest gland in the organism) and also from the fact that the entire amount of blood leaving the digestive apparatus has first to go through this organ (portal vein). It supervises all the material entering the blood stream through the digestive tract, and regulates the amounts of the various substances necessary for the maintenance of well being. Too great quantities are not permitted to enter the circulation at once. Thus, for instance, sugar is held back in the liver and stored up as glycogen. Fats, if taken in liberal amounts, are kept back in the liver until such a time as there is a demand for this substance in the blood. Proteins, likewise, are partly retained and partly worked up into amino-acids and urea. The liver also has the faculty of rendering harmless a great many poisonous substances. Another function of the liver is to take care of the red blood corpuscles which have become unfit for service and to work up the material contained in them for the service of the body.

The bile, which contains all the secretions and excretions of the liver, consists principally of biliary acids, bile pigment (bilirubin, originally derived from the hemoglobin pigment of the red blood corpuscles, the iron being separated from the pigment and deposited in the liver), cholesterin and some other substances.

The functions of an organ are frequently studied from the products of its work, usually its secretions; in pathologic conditions of the stomach, the gastric juice is minutely examined; in diseases of the kidney, the urine is subjected to analysis. Up to within recent years, the bile was not accessible for study in a direct way; only remnants of this important excretion could be investigated in the feces. The bile, as such, does not appear in the stool, for it undergoes reabsorption in the intestinal tract, and only a small portion of the biliary pigments and urobilin appear in the feces. Since, however, the duodenal tube has come into practical use, pure bile can be easily obtained and examined in its natural state.

The functions of the liver being so manifold, it is quite natural that a great many tests will have to be employed in order thoroughly to examine the work of this organ. The general activity of the liver can be demonstrated by the color reaction which is produced by the liver in the bile after the entrance of various substances into its circulation. For this purpose, peptone, glucose and olive oil (representatives of the three main food groups), and magnesium sulphate, as the representative of salt, can be employed. These may be given through the duodenum, which is the most direct route, or through other channels. After the lapse of a few minutes, all produce a darker colored bile in normal persons. If this reaction is absent, it indicates some disturbance in the efficiency of the liver with regard to the special substances employed. Thus, in gallbladder disturbances and also in severe diseases of the liver—in cancer or advanced cirrhosis—the color reaction is frequently absent after most of the foregoing substances.

The permeability of the liver can be studied by the method devised by Abel and Rowntree[1] and later on improved by Aaron, Beck and Schneider,[2] by injecting tetrachlorphenolphthalein. This substance has the disadvantage that it has to be given intravenously, a method of procedure not so easily employed in general practice. The administration of indigocarmin, which can be given intramuscularly, is by far the better method. Hatiéganu[3] has written an extensive article on the value of indigocarmin for testing the permeability of the liver. Laporte and I have made a number of investigations with this substance, and agree with Hatiéganu in most points. We gave 10 c.c. of a 1 per cent. solution of indigocarmin intramuscularly. It is understood that the solution must be sterile and administered under the most rigid aseptic precautions. While in normal persons the indigocarmin appears in the bile within from twenty-five to thirty minutes after injection, in cases of jaundice (catarrhal jaundice or obstructive jaundice due to stone) the indigocarmin fails to be excreted by the liver; it is then absent from the bile and is found only in the urine. In jaundice due to malignant disease (cancer of the liver) the indigocarmin may appear in the bile, although at a later period. In one case of diabetes we have observed a delayed appearance of the indigocarmin, it then being eliminated in a very concentrated state.

The faculty of the liver of utilizing the biliary pigment, when the latter in returning from the intestine by the portal system, has reached the former organ, is best ascertained by testing the urine for urobilinogen. In normal persons the liver intercepts the pigments, and no urobilinogen or urobilin appears in the urine. When it is present it indicates that the liver does not fulfil its duty completely. In reality, this substance, urobilinogen, is frequently discovered in the urine in many disturbances of the liver. The best test for urobilinogen is performed by Ehrlich's dimethylamidobenzaldehyd reaction. This reagent consists of 2 gm. of *p*-dimethylamidobenzaldehyd, 5 gm. of concentrated hydrochloric acid, and 50 gm. of distilled water. These substances are thoroughly triturated, mixed and filtered. To carry out the reaction, a few drops of the reagent, say about half a dram, is added to a small quantity of urine in a test tube. The presence of urobilinogen is indicated by a bright red. If no trace of red appears, it means that there is no urobilinogen present. Urobilin, however, may still exist, for it has no influence on the color with this reagent.

To prove the presence of urobilin, which likewise is a product derived from the biliary pigment, from 2 to 5 drops of a 10 per cent. zinc chlorid solution is added to a few cubic centimeters of urine; then just enough ammonia to dissolve the precipitated zinc oxid is added. The mixture is filtered and the filtrate examined, being held against a dark backkground, in the light. The presence of urobilin provokes a greenish fluorescence.

The albumose-storing power of the liver has recently been examined by Widal's[4] "crise hémoclasique." Widal's test is based on the well known fact that after

* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Abel and Rowntree: Pharmacol. & Exper. Therap., 1910, p. 231.
2. Aaron, A. H.; Beck, E. C., and Schneider, H. C.: The Phenoltetrachlorphthalein Test for Liver Function, J. A. M. A. **77**: 1631 (Nov. 19) 1921.
3. Hatiéganu: Ann. de méd., November, 1921.
4. Widal, F.; Abrami, P., and Iancovesco, N.: L'épreuve de l'hémoclasie digestive dans l'étude de l'insuffisance hépatique, Presse méd. **28**: 893 (Dec. 11) 1920.

the ingestion of food there is usually an increase of leukocytes present in the blood. Widal found that after milk has been given to patients affected with liver trouble, the usual leukocytosis does not occur, a decrease in the number of leukocytes usually being found in these instances. He explained this phenomenon by an overflooding of the circulation by albumose, which the liver was not able to store up and which in this way produces an anaphylactic shock.

Practically, the test is done in the following way: A blood count is done in the fasting condition of the patient; then he is given 200 c.c. of milk and the blood is examined every twenty or thirty minutes, for a period of an hour and a half. According to Widal, in diseases of the liver a decrease in the number of the white blood corpuscles is noticed within the first half hour to an hour of the ingestion of the milk. This test has been widely utilized by many clinicians, with varying results, some agreeing with Widal and others disagreeing entirely. Dr. Laporte and I have made a number of examinations with this test in severe diseases of the liver, and have not been satisfied with the results in helping to discover an insufficient action of the liver. In most of the cases of severe lesions of the liver there was a distinct digestive leukocytosis present, as in normal persons. While Widal's test should be further investigated, it does not at present appear to us that it will prove of much assistance.

The storing faculty of the liver for sugars and fats is best investigated by the sugar tolerance tests and by the lipase content of the blood. The sugar tolerance test can be performed, according to H. Strauss, by giving 100 gm. of levulose in 500 c.c. of water in the fasting condition. The urine is collected for four hours, and examined for the appearance of levulose by Seliwanoff's reaction, which is done as follows: To 10 c.c. of urine, a few resorcin crystals and 2 c.c. of dilute hydrochloric acid are added. Then it is heated gently over a flame. The presence of levulose produces a red color. Normally, no levulose should appear in the urine under these conditions, but in disturbances of the liver it is frequently present. The sugar tolerance test is still better performed by the administration of 40 gm. of galactose, according to the suggestion of Bauer. Galactose is a chemical substance obtained from lactose and glucose—lactoglucose. The chemical formula of lactose is $C_{12}H_{22}O_{11} + H_2O$; galactose, lactoglucose, $C_6H_{12}O_6$. Bauer gives 40 gm. of galactose in water in the fasting condition of the patient, and collects the urine for four hours. Normally, about 4 gm. of galactose appears in the urine, while in liver disturbances a much larger quantity of the galactose is discovered.

The presence of galactose can be elicited by Nylander's test, or by the usual Fehling or Benedict test for sugar. In patients who are under duodenal feeding or in whom the duodenal tube has been introduced for other purposes, I have found that the sugar tolerance may be tested sufficiently by giving 40 c.c. of a 25 per cent. galactose solution introduced through the duodenum, and the urine collected for two hours. Normally, only a trace of sugar appears within one half to one hour after the instillation of the solution, while, in disturbances of the liver, larger quantities are eliminated.

The fat-storing ability of the liver may be tested, according to Whipple,[5] by examining the blood for its lipase content. Whipple found that in impaired livers the lipase is gradually increased to almost eight times as much as normal.

While all these functional tests give us hints as to the workings of the liver or its failure to work, it is self-understood that these alone will never enable us to make a diagnosis of any special disease of this organ. This, however, does not apply to the liver alone but to all functional tests of any organ. In health and disease it is always important to look into the finer workings of the machinery, and with the aid of other symptoms this helps us to recognize a variety of diseases more easily and also to treat the individual more efficiently.

5. Whipple: Bull. Johns Hopkins Hosp., 1913, p. 357.

ABSTRACT OF DISCUSSION

DR. W. F. CHENEY, San Francisco: We all recognize the great desirability of practical tests in regard to the functions of the liver. Dr. Einhorn's tests have been known for some time, and yet they are not in general use. They must therefore have some difficulty about them. Of the difficulties that beset functional tests of the liver, the first has always been that the bile is not easily available for tests. The second difficulty is that the intricate methods described are difficult because other forms and other tissues participate in the functions involved, and we cannot be sure of our results in regard to their relation to the liver. Thirdly, there may be damage to the liver without any ascertainable loss in its function. Finally, there is the great uncertainty about the interpretation of these tests. Obtaining of bile by means of the duodenal tube entails great discomfort to the patient and loss of time to the physician. It has never been proved that it is justifiable, because of the uncertainty about the results. Chemical, biologic and bacteriologic tests consume much time, which, in my experience, is a loss. The second great function of the liver relates to excretion. Dr. Einhorn speaks of a test long in use, only to discard it—the phenoltetrachlorphthalein test. Dr. Einhorn seems to criticize the injection of this dye intravenously, which, to my mind, is a very simple procedure, involving much less discomfort than the tube. He calls attention to the fact that the old method of examination of the feces is now practically discarded. A valuable point about this phenoltetrachlorphthalein test is that it comes out by the liver, and not through the other excretions. In THE JOURNAL, March 17, 1923, Rosenfield and Schneiders offered a solution of our problems which seems much better than any other method, and that is the intravenous injection of this dye, and then tests of the blood at subsequent intervals to find whether there is retention of the dye.

DR. JOHN V. BARROW, Los Angeles: In connection with liver function tests, I desire to mention the Widal hemoclastic crisis as carried out by me in more than sixty cases of typhoid fever in my service at the Los Angeles General Hospital. Realizing that there must be a heavy liver load in such a bacteremic and toxic disease, I determined that the behavior of this test, if positive, would be both a valuable check on the test itself and a serviceable factor in the diagnosis of the disease. It has been found positive in more than 86 per cent. of the cases. It outranks in percentage all other tests or findings, except the enlarged spleen. One case in particular confirms the value of the test as to liver function. A girl was sent into the ward in a semicomatose condition, with a tentative diagnosis of typhoid. Her history was unobtainable. She had rose spots and a large spleen. The leukocyte count was 24,000, which, after feeding, fell to 19,000. The serum agglutination test was negative for typhoid, and the blood showed a pure culture of *Bacillus coli*. She died the following day, and the necropsy showed multiple miliary abscesses of the liver. In this case the positive liver function test was in harmony with the pathologic findings.

DR. MAX EINHORN, New York: I would answer Dr. Cheney by saying that the application of the duodenal tube for examination, if it is done in the correct way, does not require much effort, or too much time, either. We give the patient the tube at night before he goes to bed. He sleeps with it, and during the night it enters the duodenum. Then it is

ready for use. It is not mixed up with the food. Then we make the test. I spoke of liver functions. I did not mention the importance of these tests with regard to gallbladder lesions, which is very important, I think—more than anything else. I think we cannot do without it, and, even if some physicians do do without it now, they will find in a few years that they will have to use it. The duodenal tube cannot be dispensed with. We may dispense with it today, but we shall find that we shall need it before long. With regard to liver functions, it is quite natural that processes which are complicated cannot be applied in each case. But the hospitals and the clinic have the means to study and find out what is normal and what is pathologic, the fruits of which will come later on. With regard to the phenoltetrachlorphthalein test, what I said was that the other tests give just as much information, and perhaps I find them more convenient. The functional tests that I mentioned refer to the physical qualities of the bile simply by inspection. That is one of the easy functional tests, because we find normally that there is a darker colored bile coming. The dark colored bile does not come from the gallbladder; it is a continuous process of secretion and excretion by the liver. The main reason I say that it is not the opening up of the gallbladder is that the reaction taking place is very gradual, step by step. There is no sudden change of color from yellow to dark. If it were due to the emptying of the gallbladder, the change would be sudden. The Widal test did not prove very satisfactory in my cases. It is easy enough to give a few hundred centimeters of milk, but I have had a number of cases of cancer of the liver, and the patient died shortly afterward. If the liver is diseased to such an extent that the whole liver is cancerous, and the patient dies, and we still get a normal reaction, how can we say we shall get much information from such a test? That is the reason I do not think it will be of much value.

PANCREATITIS AS RELATED TO GASTRO-INTESTINAL AND GALLBLADDER INFECTIONS

WITH SPECIAL REFERENCE TO DIET IN THE PREVENTION AND TREATMENT OF DIABETES *

SEALE HARRIS, M.D.
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The discovery of insulin has brought about a renaissance in the study of diabetes; and since the cardinal principle in the treatment of disease is to find the cause and remove it, the etiologic factors of hyperglycemia are now receiving consideration by a number of investigators. That a preceding pancreatitis from which results permanent damage to the islet glands that secrete the hormone now called insulin is usually the direct or predisposing cause of diabetes is now accepted by many clinicians who have had a large experience in treating diabetes. Allen speaks of diabetes as the "vestigium of a burnt out conflagration." He made investigations on animals in which he produced experimental pancreatitis and hyperglycemia, thus proving to his satisfaction that a damaged pancreas is an essential factor in the etiology of diabetes.

Those who believe that overeating is the sole cause of diabetes in many cases, and that the obese individual is potentially a diabetic, point to the fact that even in cases of severe diabetes sometimes no lesions of the islands of Langerhans can be demonstrated either macroscopically or microscopically. Allen meets this objection to the theory of a preceding pancreatitis as the essential underlying factor in the production of diabetes by stating the fact that he has produced pancreatitis in animals, and that after their recovery in some cases, necropsies have revealed no evidence whatever of the pancreatitis infection which he knew had existed.

Banting also believes that a pancreatitis is an important etiologic factor in diabetes, and in support of this opinion he cited instances in the Children's Hospital in Toronto in which the removal of infected tonsils had been followed by a return to the normal, or a marked reduction in the blood sugar of infants with diabetes.

DIABETES FOLLOWING TRAUMA

While I have made no experiments in producing pancreatitis and diabetes in animals, from clinical experience I am convinced that a damaged pancreas, either from infection or from trauma, may be the active or predisposing cause of diabetes. To prove this assertion I need mention only four cases:

CASE 1.—A railway engineer, aged 51, who came to us in January, complaining of thirst, polyuria, loss of flesh, numbness of feet, with beginning gangrene of the right toe. Nine years before he had been in a collision in which he sustained serious internal injuries. He was in bed for months following the injury, his prominent symptoms having been pain and tenderness in the upper part of the abdomen, nausea and vomiting. A few months after his recovery, his physician found sugar in the urine. For several years he was able to keep the urine sugar free by dieting, though recently he was unable to control the sugar output, and the numbness and coldness of his feet had been quite annoying. He had been sleeping with an electric pad to his feet to keep them warm. One morning, he awakened to find a blister on one of his right toes, which resulted in the formation of a gangrenous spot. His blood sugar was found to be 320 mg. per hundred cubic centimeters. He was placed on a low maintenance diet, of 72 gm. protein, 120 gm. fats and 32 gm. carbohydrate, totaling 1,488 calories, which did not reduce his blood sugar to normal. He was given 30 units of insulin a day, and in a few days the blood sugar was reduced to the normal range, the urine became sugar free, the numbness and coldness of his feet passed off, and the gangrenous spot sloughed off and healed without operation. The urine has remained sugar free most of the time on this normal maintenance diet, and he left off the insulin. The rest which this patient's pancreas had from the use of insulin for a few weeks seemed to have increased his ability to secrete the hormone (insulin) controlling the blood sugar sufficiently to enable him to metabolize enough carbohydrates to keep him well and comfortably nourished.

CASE 2.—A railway brakeman, aged 30, fell from a car, sustaining a fractured hip and internal injuries, the symptoms of which suggested a trauma of the pancreas. He had a slow recovery, lost flesh, and developed thirst, polyuria, weakness and anemia. A few weeks after the injury, the urine was found "loaded" with sugar. He was sent to us in March. His blood sugar was 320 mg. per hundred cubic centimeters. A low maintenance diet and a "nonnutrient" day did not reduce the blood sugar to normal, or render the urine sugar free. He was given 40 units of insulin a day and kept on his maintenance diet of 58 gm. protein, 130 gm. fats and 50 gm. carbohydrate, totaling 1,600 calories. We believe this patient to have been almost totally depancreatized, because, in spite of the large doses of insulin, we have never been able to reduce the blood sugar to normal or to make the urine sugar free. He has improved remarkably, however, having gained 15 pounds (7 kg.), and likewise his physical strength and mental well-being have been increased very markedly. This case of diabetes followed so closely a railway accident that the railroad company by which he was employed has assumed the physician's fees and the insulin expense, and proposes to provide for him the rest of his life by giving him a monetary compensation,

* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

a position requiring light work, and an allowance for insulin. This patient will have to use insulin as long as he lives. With 30 units a day he can keep comfortable and be efficient; but without it he would surely die in a few months.

DIABETES ASSOCIATED WITH PANCREATITIS

CASE 3.—Before the days of insulin, a merchant, aged 45, had a chronic cholecystitis requiring an operation. He had had glycosuria for several years. He was operated on by Dr. Lewis Moores, who did a gallbladder drainage, and while operating found an enlarged, hard pancreas suggesting carcinoma. Following the operation the patient's urine became sugar-free, and remained so for several years. He was referred to me for dieting, following an operation for acute appendicitis with a large abscess. I tried a high caloric and high carbohydrate diet on this patient, and the urine remained sugar free during his long and difficult convalescence following the drainage of a large appendical abscess. The gallbladder drainage apparently cured the pancreatitis, thus restoring the function of the insulin-forming glands.

CASE 4.—Before insulin was discovered, an insurance agent, aged 35, was referred to me for treatment for diarrhea. He gave a history of having been operated on for gallbladder infection by Dr. Joseph Colt Bloodgood. He was told after the operation that he had an enlarged, inflamed pancreas. I wrote Dr. Bloodgood for a report on his operative findings, and the reply confirmed the patient's statement. In the routine of our examination this patient was found to have a trace of sugar in the urine, and the blood sugar was very high, having been 700 mg. per hundred cubic centimeters of blood. Examination of the patient's stools showed azatorrhea and steatorrhea. Therefore the diarrhea was probably due to deficiency in the pancreatic digestive enzymes. Evidently, in this case both the insulin-forming and digestive enzyme-producing cells were involved in the inflammatory process of the pancreas. The urine became sugar free, and the blood sugar was reduced to 100 mg. by a modified Allen low caloric diet, and the diarrhea was improved by the use of extracts of the digestive enzymes of the pancreas. This patient passed from observation, but he probably has had recurrence of diarrhea and hyperglycemia.

SOURCES OF INFECTION IN PANCREATITIS

Infection of the pancreas may take place in a number of ways; but, on account of its anatomic relations, its blood supply and its lymphatic connections, it would seem that the most frequent sources of infection are from lesions in the gallbladder, stomach, duodenum and other portions of the small intestine and the colon. Indeed, when the anatomic relations and the collateral circulation of the pancreas are considered, it is difficult to understand how it escapes infection when there is an inflammatory lesion of any of the abdominal viscera.

The following are the most important avenues of infection in pancreatitis:

1. Infections of the gallbladder would seem to be and often are associated with a pancreatitis. The opening of the common bile duct in the duodenum is very close to the openings of the ducts of Wirsung and Santorini, when the latter does not empty into the main duct. The common bile duct is always in contact with the head of the pancreas and often is embedded in it. It would therefore seem that both by continuity and by contiguity of structure a cholangeitis or a cholecystitis would frequently be associated with an inflammation of the pancreatic duct (sialo-angitis and sialodochitis) and interacinar pancreatitis. The fact that surgeons in operating for gallbladder disease frequently find an enlarged and inflamed pancreas, which subsides with the removal of the gallbladder infection by drainage or a cholecystectomy, seems to favor the theory that pancreatitis is often secondary to gallbladder disease. The fact that in a number of reported cases glycosuria patients have become sugar free after drainage of the gallbladder would seem to make it advisable to suspect gallbladder infections in diabetes; and, if such exist, an early operation may cure the pancreatitis and at the same time remove the primary or associated lesion.

2. Since the pancreatic duct, or ducts, open in the descending portion of the duodenum, and the head of the pancreas is almost entirely surrounded by the coil of the duodenum, it would seem that a duodenitis, which we know to be a frequent condition, would be followed by pancreatic disease. Ulcers of the duodenum may result in adhesions of the duodenum with subsequent pancreatitis. The jejeunum is also in relation to the inferior surface of the body of the pancreas.

3. The concavity of the lesser curvature of the stomach corresponds approximately to the convexity of the anterior surface of the pancreas, and ulcer and carcinoma of the stomach result in adhesions to, and secondary infection or metastasis of, the pancreas.

4. The anterior surface of the pancreas is separated from the transverse colon by the lesser peritoneal sac, and the colon itself may actually be in contact with the inferior surface of the pancreas. A colitis may be followed by pancreatitis; and, in my opinion, lesions of the colon are the most important sources of infection of the pancreas.

5. Since the spleen, the left kidney and the left suprarenal body are in contact with the tail of the pancreas, the primary infection in pancreatitis may be in one of those organs.

6. Pancreatitis undoubtedly may be of hematogenous origin, and the removal of focal infections from the tonsils and teeth should receive the same consideration as in the inflammatory diseases of other organs of the body. It would seem, however, that, since the blood supply of the pancreas comes from the superior and inferior pancreaticoduodenal branches of the hepatic and superior mesenteric arteries, and from the splenic artery, infections of the intestinal tract may be carried in the blood stream to the pancreas. McCarrison made sections of the intestine of pigeons in which he had produced an enteritis by feeding them exclusively pure carbohydrates. They showed an eroded villus, with blood tract therefrom to distended subperitoneal vessels, constituting a direct passage for intestinal organisms to the blood stream. The intestines harbor the various streptococci, the colon bacillus and other pathogenic organisms, and there then can be no question that enteritis and colitis in human beings are the foci of infection for the pancreas and even the remote organs of the body.

7. Infections may be carried to the pancreas through the lymphatics.

GASTRO-INTESTINAL INFECTIONS

We know that infections of the gastro-intestinal tract are among the most frequent diseases of both infant and adult life. I have not seen any statistics on the incidence of gastro-intestinal diseases in the United States, but in England recent reports from various clinics show that 25 per cent. of all patients have gastro-intestinal lesions. When we consider the large number of abdominal operations for appendicitis, gastric and duodenal ulcer, and gallbladder infections, as well as the frequency of the medical diseases of the gastro-intestinal tract, such as acute and chronic gastritis, the diarrheas and the colitis associated with

constipation, it surely seems that gastro-intestinal diseases are among the most frequent of modern life. I am one of those who believe that diseases of the digestive organs, including the pancreas, are increasing, though I have no statistics to prove it.

The causes for the increase in diseases of the digestive organs, including the pancreas, have been ascribed by McCarrison [1] to faulty food. McCarrison's experiments on animals, and his observations among the natives of the Himalaya Mountains, seem to prove that infections of the intestinal tract, particularly colitis, result largely from the present-day diet of an excess of pure carbohydrates, fats and meat proteins, with a deficiency of the antineuritic and the antiscorbutic vitamins, in addition to the lack of other requisite constituents of human food, particularly iodin, calcium and phosphorus. He fed healthy monkeys on pure carbohydrates, fats and proteins, a diet similar to that of white bread, polished rice, potatoes, sugars and sweets of all kinds, lean meats, animal and vegetable fats, on which most civilized peoples live, with a constant resulting enterocolitis. He fed control monkeys on a diet containing the same amount of carbohydrates, fats and proteins, but with the proper vitamins and mineral substances, and the control animals remained normal. He fed pigeons on autoclaved polished rice, with the result that they not only developed enteritis and colitis, but also a polyneuritis.

McCarrison thinks that our present-day diet of an excess of carbohydrates, fats and lean meats, by lowering resistance of the tissues of the gastro-intestinal tract, deprives them of their protective power to prevent invasion by pathogenic organisms. He found that properly nourished monkeys, when given quantities of *Endameba hystolitica*, did not develop dysentery, while those fed on a deficiency diet promptly developed diarrhea and the characteristic lesions of amebic dysentery.

McCarrison also called attention to the fact that, in his nine years' practice among the inhabitants of a remote part of the Himalayas, during which time he performed an average of 400 major operations a year, he did not see a case of asthenic dyspepsia, gastric or duodenal ulcer, appendicitis, mucous colitis, or other digestive diseases, in spite of the fact that the general hygienic conditions were bad. He thought that this freedom from the abdominal infections so prevalent among civilized people was due to the fact that all infants were fed on mother's milk, or they died; and that the adults among these remote tribes of the Himalayas lived on natural foods, i. e., milk, eggs, fresh fruits and leafy vegetables. They had no sugar or alcohol. McCarrison came to the same conclusion as Hinhide, that "the two chief causes of death among civilized people are food and drink."

Applying to human beings the deductions drawn from animal experiments, McCarrison called attention to the similarity of the conditions observed in the intestines of animals fed on a pure carbohydrate diet, and the anatomic factors seen in chronic intestinal stasis. This condition, in my opinion, exists in a large majority of adult Americans. Roentgen-ray studies of the gastro-intestinal tract is a routine procedure in the examination of all our patients. We find that in more than 75 per cent. of cases the barium meal is still in the cecum and ascending and transverse portion colon, twenty-four hours after ingestion. Examination of the feces is another routine laboratory procedure in our work, and a large proportion of cases show mucus present in the specimens. The presence of mucus in the feces means a lesion somewhere in the intestines, and we think usually in the colon. We have found intestinal stasis and mucus in the feces in many of our diabetic patients, and it seems to me that a chronic colitis is most likely the source of infection in the pancreatitis which impairs the function of the islet glands.

It may be that the pancreatitis occurred years before glycosuria was found, and that the anamnesis does not elicit a history of a previous pancreatitis; but I believe that we may assume a previous or a present pancreatic infection in diabetes, and that we should endeavor to find the cause and remove it if possible. It seems probable that in many cases the pancreatitis was associated with the intestinal infections of infancy, and that the islands of Langerhans are able to secrete enough insulin for carbohydrate metabolism in a person of average weight, but that in obesity the overworked, damaged pancreas rebels against the load that has been placed on it by the individual who overeats.

THE FOOD FACTOR IN THE ETIOLOGY AND TREATMENT OF DIABETES

The theory of a previous pancreatitis in diabetes should not make us underestimate the importance of overeating as a large factor in the production of diabetes. The statistics of Joslin show clearly that the majority of patients with diabetes are, or have been, overweight; and most of our diabetic patients give a similar history. Paulin showed that the blood sugar was high in obese persons who did not have glycosuria, and his conclusion was that they were potentially diabetic; but the normal pancreas can stand a heavy load, and the great majority of obese persons do not develop diabetes. Overeating plus a damaged pancreas seem to me to be the important etiologic factors in diabetes.

MacCollum's observations on the diet of the American people as a factor in mouth infections apply equally to infections of all the organs of digestion, including the pancreas. He points out the fact that a diet of white bread, potatoes, refined cereal breakfast foods, polished rice and sweets; the muscle cuts of meat and fat meat, lard and butter substitutes, is deficient in vitamins and lacking in calcium, iodin, phosphorus and other essential minerals. He is urging the American people to go back to the diet of our parents and grandparents, who lived on bread made from whole wheat flour, or whole corn bread, unpolished rice, milk and its derivatives, butter and cheese; the green vegetables and raw fruit, with a moderate amount of meats. MacCollum has announced a formula for the perfect daily diet, i. e., "one raw fruit, one uncooked vegetable, two green vegetables and one quart of milk a day, to which should be added enough bread, butter and meat to meet the nutritional needs of the body." This diet, if carried out by the American people, would result in an enormous decrease in diabetes, along with a lessened number of cases of intestinal infections.

In the treatment of diabetes it is as important to see to it that the diet contains sufficient vitamins and the proper mineral constituents as it is to know that the starches and sugars and proteins and other glucose-forming foods are reduced to the patient's tolerance. Therefore, in the diabetic patient's menu, fats should

1. McCarrison, Robert: Studies in Deficiency Disease; Faulty Food in Relation to Gastro-Intestinal Disorder, J. A. M. A. **78**: 1 (Jan. 7) 1922.

consist largely of butter and cream, which are rich in vitamin A; the carbohydrates should come principally from the green vegetables, which contain not only vitamins A, B and C, but are rich in iron, calcium, phosphorus and other essential minerals, and from raw fruits and uncooked vegetables which contain the antiscorbutic vitamin. The diabetic patient should be taught the vitamin and mineral values of his daily diet as well as the arithmetic of carbohydrates, fats and proteins.

CONCLUSIONS

1. Diabetes is a disease characterized by impairment of the function of the insulin-forming glands in the islands of Langerhans, and is due primarily to trauma of the pancreas, or to a pancreatitis.

2. Infections of the pancreas are usually secondary to lesions of the other abdominal viscera, though other foci of infection, as the teeth and tonsils, may be the primary cause. In treating diabetes, the primary cause of the disease should be sought for and removed, if possible.

3. A deficiency diet is the predisposing cause to the intestinal lesions which seem to be an important source of infection in pancreatitis.

4. An educational campaign teaching the public the importance of a diet containing the proper amounts of carbohydrates, fats and proteins, as well as sufficient vitamins and the essential mineral food constituents, would prevent diabetes to a large extent.

5. In the treatment of diabetes, due regard should be paid to the vitamin and necessary mineral constituents of food.

ABSTRACT OF DISCUSSION

DR. FREDERICK M. ALLEN, Morristown, N. J.: The pancreas seldom gives clear symptoms or signs of its troubles; therefore, except for rare surgical cases, pancreatitis is seldom diagnosed clinically. Pathologic studies show that the pancreas is one of the most frequently damaged organs of the body, and in 50 per cent. or more of all necropsies it shows lesions of some degree. The literature divides pancreatitis etiologically into blood-borne, duct-borne and lymph-borne forms. Blood-borne pancreatitis is rarely diagnosed clinically. Hypothetically, at least, we may regard acute blood-borne pancreatitis as the cause of most juvenile diabetes and also of many cases, especially of the severe type, in later life. The duct-borne and lymph-borne forms of pancreatitis damage the acini more directly than the islands, but, nevertheless, the injury of the latter often suffices to cause diabetes. Thus, gallstones hold a place among the causes of diabetes. The differences in the progressiveness of diabetes are due not so much to the advance of the primary lesions as to differences in the susceptibility to hydropic degeneration of islands, which is greatest in the young. This form of degeneration is governed almost altogether by the diet. Both diet and the removal of infectious foci are necessary to protect diabetic patients of any age against downward progress. Concerning the diagnosis, diabetes is not shown by glycosuria alone. Much can be learned from blood sugar analyses, both fasting and after heavy carbohydrate meals, and also after 100 gm. of glucose. Accurate blood sugar and tolerance tests will unravel most of the mystery of necropsy studies, which heretofore have frequently shown pancreatitis in the absence of a clinical diagnosis of diabetes. More investigations should be made by the method introduced by Wille, namely, by testing the glucose tolerance of as many hospital patients as possible, and examining the pancreas of all who come to necropsy. Evidences of a lowered tolerance should not be ignored therapeutically. Treatment is generally advisable, even for persistent hyperglycemia of marked degree. This treatment generally requires limitation not merely of carbohydrate but also of fat and total calories in the diet, and appropriate reduction of body weight. Occasional digestive complaints are thus relieved, for one of the commonest causes of functional indigestion is simply the eating of more than the body requires. But, in addition, reduction of total calories and body weight often improves the carbohydrate tolerance and controls a stubborn hyperglycemia when carbohydrate restriction alone is unsuccessful. Surgical removal of infectious foci, whether in the gallbladder, appendix, tonsils or anywhere else, is desirable for either the prophylaxis or the treatment of diabetes. Thorough dietary preparation is advisable when possible, and makes operations on diabetic patients practically as safe as on nondiabetic patients. America has reversed the old European rule that surgery on patients with diabetes should be avoided as far as possible. All foci of existing or potential danger should be cleared up, all the more scrupulously because of an existing or threatened diabetes. Insulin can render further aid if required, but it does not absolve from the clearing up of infections.

DR. MAX EINHORN, New York: Some years ago I had a paper on pancreatitis which also mentioned the influence of diabetes in making a diagnosis of pancreatitis. I am convinced that a diseased pancreas is frequently the origin of diabetes. I will mention one thing, which is somewhat new: I had some diabetic patients who had to have duodenal feeding on account of other complications (ulcers of the stomach). I found that during the period of treatment (namely, feeding) they could stand milk and glucose without eliminating any sugar in the urine. The explanation for this could be found, as it appears to me, in the process of resting up of the pancreas. It is the same way as in regard to the conditions of the liver, when we take away part of the portal circulation. The same or a similar phenomenon probably takes place in the pancreas, and I think it is able to help in burning up the sugar which is given by the milk diet. We give half an ounce of glucose every half an hour in the milk, and the milk itself contains glucose besides. In two patients that I had recently this took place. They felt very well, and there was no sugar elimination in the urine. Maybe Dr. Harris can explain that.

DR. SEALE HARRIS, Birmingham, Ala.: I believe that when the public understands the need of having a properly balanced diet, one containing the proper amount of vitamins, as well as the chemical constituents, we shall then be able to prevent a great deal of diabetes because there will be fewer gastrointestinal infections and less pancreatitis. Diabetic patients are often undernourished, and I think that the cause is not in the amount of food but in the deficiency of vitamins and the mineral substances that are necessary to proper nutrition. We should also attempt to find and remove the primary foci of infection for the pancreatitis, the most important factor in the etiology of diabetes.

Culion Leper Colony.—This colony, established seventeen years ago in the Philippine Islands as an isolation place for lepers, is the property of the Philippine Health Service. It is for the most part a nipa-roofed town of 5,000 inhabitants and occupies about 40 acres. On this there are more than 600 houses for lepers. Rice is the staple food; beef is issued once a week, and 250 gm. of fresh fish is supplied to each inmate daily. A "gratuity" of ten cents a week is allowed each leper. Previous to 1921, when the new chaulmoogra oil treatment was started, all the medical work was done at the so-called general hospital on the island, consisting of six wards and 300 beds. This institution, through the active interest of Governor General Wood, has been enlarged. The equipment has been meager, but surgical instruments, scales, and blood pressure, aspiration and infusion apparatus have recently been secured, and this year a roentgen-ray, quartz light and electrotherapeutic apparatus will be added. There are at present fifteen physicians in the medical section, as compared with four in 1921. The nursing staff consists of ten sisters of charity, and twenty graduate nurses. According to reports, the results of the work done so far have been distinctly encouraging, not the least being the fact that for the first time since active segregation was inaugurated, lepers are voluntarily reporting to the authorities for treatment.

AN OPERATIVE METHOD FOR CORRECTION OF CERTAIN FORMS OF FLATFOOT *

C. L. LOWMAN, M.D.
LOS ANGELES

There are certain types of feet which, despite long and carefully applied corrective procedures, persist in assuming a bad valgus position with marked depression and flattening of the arches. We may prop them up, exercise them faithfully, and use massage, elevation, strapping and padding diligently for several years, and still find that, on removal of the brace or support, the foot tips and flattens as much as ever. Much attention has been given to the correction of valgus deformities in the paralytic type of flatfoot, but many are still withholding surgery from other forms of flatfoot, even though resistant to efforts at correction by other means.

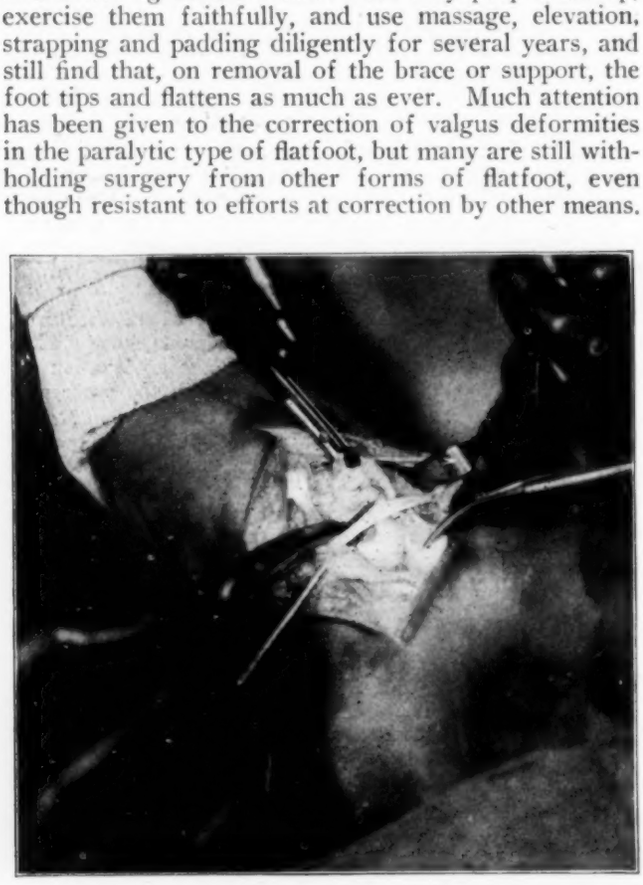

Fig. 1.—The astragalonavicular ligament, having been incised, is held back with the upper two clamps; the wedge of bone has been removed chiefly at the expense of the scaphoid and partly from the head of the astragalus; the anterior tibial tendon, isolated in the upper margin of the wound, is displaced backward and downward so that it loops under the squared off corner of the scaphoid, coming up as indicated through the osteotomy incision.

Flatfoot of the congenital type, both rigid and flexible, and pes planus in young adults and adolescents, either flexible or rigid, that have failed of correction by conservative procedures, should be investigated most thoroughly to ascertain the cause of failure, and the same effort should be made to correct the deformity and obtain stabilization as is made in paralytic flatfoot.

Feet which we designate as potential valgus in young children and which have gone on for ten or twelve years with the history of weak ankles and low arches, easy fatigability and "growing pains;" which may get relief from symptoms of muscle strain and fatigue by the usual corrective procedures and by shifting the weight line to the outer border, but which will not tighten up enough to retain a normal position, shape or alinement, certainly present a problem serious enough to challenge our interest and demand our best judgment. The fact that many patients with extreme flatfoot go through life without foot symptoms is not a legitimate excuse for failure to advise corrective surgery. The deformity needs consideration just as much as a clubfoot of similar degree, or a foot weakened and deformed by paralysis.

As to the factors that cause this condition (excluding for the present the hereditary or congenital type), I would put faults in leg alinement first, faults in nutrition and lowered muscular and ligamentous tone second, and faults in tarsal development third.

This classification is a rough general one, and cannot be otherwise, because any or all of the conditions may be present in the same case, and a vicious circle usually exists, including all of them. For instance, structural faults increase the muscular load, inducing muscle strain and stretching, which in turn increases the deviation in alinement.

Tibial torsion, bow-leg and knock-knee are the chief factors that produce a faulty inward thrust on the foot, preventing its development along correct lines.

Inward rotation of the thighs with stretching and relaxation of the external rotators is probably secondary, but may occur concomitantly with the valgus in the foot. Once begun, it continues to act as a deforming force by its twisting effect on the astragalus, through the wrenchlike grip of the tibiofibular mortise.

If the downward and inward thrust through the neck and head of the astragalus which is transmitted by the tibia in either bow-legs or knock-knee is not resisted strongly enough by the deltoid and calcaneonavicular ligaments which support the scaphoid, the forefoot cannot assume the adducted position necessary to develop a normal arch. In the prepubertal period and during the fast growing years, increasing weight is often associated with decreased tone of muscles and ligaments. This, together with greater bodily activity, may stretch farther the ligaments mentioned above, and result in the loss of what little arch may have formed before that time.

If weight is borne continuously on a foot thus flattened, the plantar ligaments and muscles, which are the supporting structure, gradually lose all elasticity, and even though the weight is then thrown to the outer border of the foot, there is no "comeback" in these structures, and, in addition, structural changes may have taken place, chiefly in the scaphoid and astragalus. When these factors have become fixed, it will require actual structural correction to reestablish proper alinement and remove the elements of strain that produce the energy loss incident to the bad static situation.

When a foot is developing in this relaxed condition, the space between the sustentaculum tali and the cuneiform bone is longer than normal, and as both the scaphoid and the astragalar head occupy this space, they become malformed, of necessity, during growth; and, being too long on their inner aspects, they cannot later be crowded up into a space too small to accommodate them.

There is frequently seen a type of scaphoid which is almost crescentic, which hooks far around the inner side of the head of the astragalus (often with a tibiale externum present—sometimes fused), and the length of which from before backward on the inner aspect is much greater than ordinarily seen—sometimes even an inch in thickness. Any downward and inward thrust from above forces this scaphoid downward and for-

* Read before the Section on Orthopedic Surgery at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

ward as a wedge, transforming the potential into an actual valgus. If the bone has grown thus, in a valgus and depressed state, no amount of effort can force it up, nor can the forefoot be adducted again, as long as this obstacle prevents it.

One other developmental factor should be mentioned as causative in converting the potential into the actual structural flatfoot. The scaphoid is the last of the tarsal bones to appear, showing the beginning of its ossification at from 3½ to 4 years, and normally finishing it at about 6 or 7 years. However, there is great irregularity in this time of ossification, and its growth may be erratic and ossification greatly retarded, as I have mentioned before,[1] the retardation here being comparable to a similar one in the carpus, as pointed out by Rotch.

If the scaphoid bone does not fill in and harden rapidly enough, it fails to block out the length of the inner aspect of the foot, and the astragalus, which appears at birth and is growing rapidly, has to elongate to make up the deficiency. In so doing, it is allowed to sag down, as mentioned above, or, more accurately, is not raised up, as it is in a normally developing foot, by the growth and hardening of the normal navicular.

Poor nutrition, especially faulty lime metabolism and decreased alkali reserve, undoubtedly are influences that have to be considered in connection with this delayed ossification, which disturbs the formation of a normal arch.

There is another fact that we have considered of very real importance in feet of this type, and that is the direction of pull of the anterior tibial muscle, which

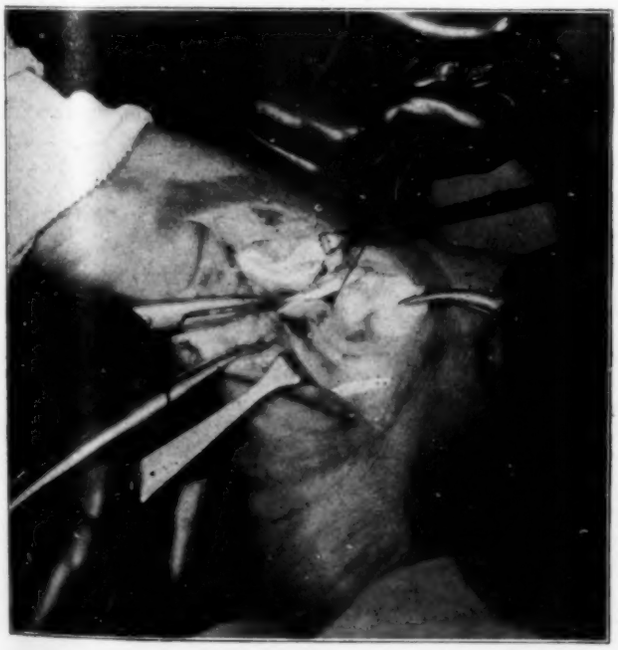

Fig. 2.—The deep suture (kangaroo tendon), placed through the calcaneonavicular ligament as deep in the osteotomy wound as possible, is brought up and tied around but not through the anterior tibial tendon, the assistant forcing the tendon as far back as possible. The slack is taken up in the calcaneonavicular; it is pulled up in tent fashion, being pulled in on its two ends, one of the tie bands under the arch thus being shortened.

normally aids greatly in holding the scaphoid strongly up against the head of the astragalus; but in these relaxed cases its pull is so far forward of the mediotarsal joint that it actually has become a powerful deforming factor. Whenever the scaphoid bone is below a certain level, and particularly when the plantar ligaments are relaxed, the pull of this muscle raises the front foot exactly as the Achilles tendon raises the os calcis posteriorly, thus supinating the forefoot.

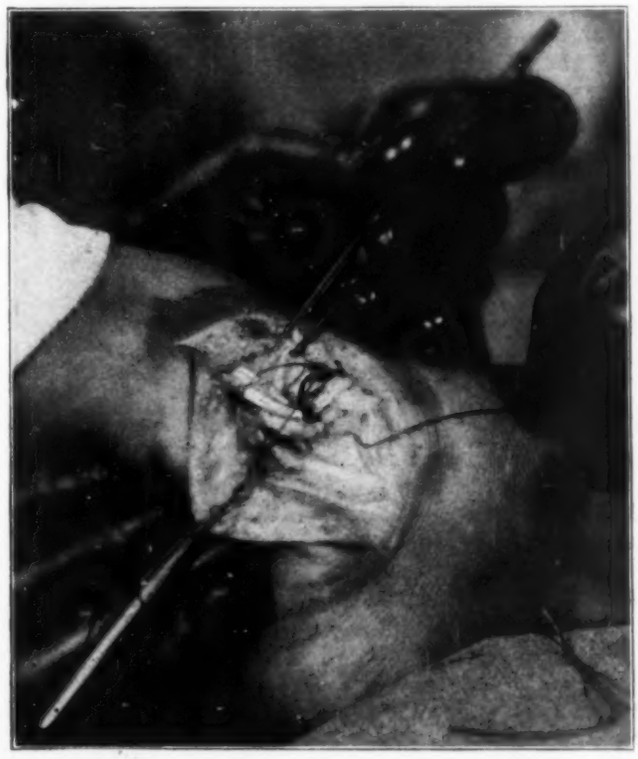

Fig. 3.—Flaps of the scapho-astragaloid ligament laid back into position, imbricated and secured tightly. The margin of the calcaneonavicular ligament being sutured into the lower portion of the lateral flap over the distal portion of the anterior tibial, where it passes under the scaphoid.

There is no material difference between flattening an arch (*a*) by letting go of the struts and forcing its abutments apart by pressure in the middle, or (*b*) by lifting up its two ends when the supporting substructures cannot keep the abutments in place.

In order to restore the tarsus to a normal or improved weight-bearing condition, and thereby relieve stresses and strains on structures above the feet, it must be altered structurally.

METHOD OF OPERATING

The operation here described was designed to allow the reposition of the distorted tarsus by a skeletal attack, and to maintain this position by the correction of deforming factors with replacement as far as possible of the strutwork that ties the anterior and posterior members of the arch together.

A curved incision is made, base downward, extending from just below the inner malleolus upward and forward to a point above the scaphoid, and thence forward and downward to a point on the inner aspect of the base of the first metatarsal. The skin flap is dissected back, and a straight incision is made through the fascia, which is separated by blunt dissection well down below the tip of the scaphoid, exposing the inner edge of the calcaneonavicular ligament. The astragaloscaphoid ligament is incised in line with the joint, and the outer end of the scaphoid is denuded of its periosteum, with all ligamentous attachments. The Achilles tendon is tenotomized and the foot is forced upward to

1. Lowman, C. L.: Delayed Developing of the Tarsus, Am. J. Orthop. Surg. **15**: 479-482 (June) 1917.

lower the posterior end of the os calcis. Next, a wedge is excised chiefly at the expense of the scaphoid, a fair piece also being taken from the head of the astragalus, base downward and inward. It is deepened sufficiently to relieve all obstruction to adduction and depression of the forefoot for the formation of a satisfactory arch. If the Achilles tendon is too much shortened, it is lengthened rather than tenotomized. Next, if it is a

Fig. 4.—Foot before and after operation. The operation was performed June 4, 1920. The second model was taken in September, 1920, by the father and forwarded from New Mexico. The boy is at present taking a medical course at Ann Arbor.

simple nonparalytic flatfoot with fairly strong tibials and not much overaction of the peronei, the latter are simply tenotomized. Then the anterior tibial tendon is isolated down to its attachment, and it is displaced with a curved instrument or blunt hook, inward and downward until it slips over the squared-off corner of the scaphoid, thus passing through the opening made by the osteotomy. It is not detached, however, but its direction is altered, so that, in pulling upward, it raises the scaphoid or keystone upward, assisting in forming an arch, rather than deforming it, as it had been doing previously.

The displaced tendon of the anterior tibial should be grasped with strong forceps and held down under the scaphoid while the operator places a deep suture of fine kangaroo tendon strongly into the middle of the calcaneonavicular ligament under the gap of the osteotomy opening; next, this is brought up and passed around, not through, the anterior tibial tendon, the assistant making strong correction of the arch while it is tied. This position must be maintained while a couple of strong chromic sutures are placed through the margin of the cut astragaloscaphoid ligament laterally. When these are strongly approximated or imbricated, the foot will remain in fairly good position, which, of course, is improved to its maximum while the cast is put on.

In cases of marked overaction of the peronei, the peroneus longus may be brought across the front of the ankle under the annular ligament, by way of the sheath of the anterior tibial tendon; but, contrary to the usual practice, as given in some of the most recent articles on tendon transplantation, it is not inserted at the anterior tibial attachment, but is brought out of the anterior tibial sheath directly downward into the gap between the astragalus and scaphoid, and sutured to the calcaneonavicular ligament, the latter thus being pulled up tent fashion and this relaxed strut being drawn up tightly.

In a paralytic case without anterior tibial, the same procedure is carried out, except that the extensor proprius hallucis, as well as the peroneus longus, is brought back; and all these structures thus brought into the arthrodesed area are given a strong osseous implantation.

A subastragaloid arthrodesis by Hoke's method will give a most satisfying result when judiciously used with this procedure.

A plaster dressing with slightly flexed knee is kept on for four weeks, when it is changed to a straight cast with strong, well molded foot piece. Weight bearing is begun at from seven to eight weeks, followed at from the tenth to the twelfth week by a shoe with an arch brace, and, if necessary, a caliper leg splint until the latter can be removed. The plate should be worn for from six months to a year. Later, corrected shoes to maintain a proper relation of the foot to the leg and to neutralize any residual, uncorrectable element of leg deviation should be worn. Several cases of congenital rigid or semirigid flatfoot in adults have stood the test of five years, and many children and adolescents during this time have been satisfactorily corrected.

I advise that in most of the more serious older cases of congenital structural flatfoot, only one at a time be operated on, because the patient can be up sooner and has one reasonably useful foot to walk on while breaking in the new one. If the worst foot has been done first and not quite as good a position gained as might be desired, it can be further manipulated when the other foot is operated on.

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CORRECTION OF EXTREME FLATFOOT

VALUE OF OSTEOTOMY OF OS CALCIS AND INWARD DISPLACEMENT OF POSTERIOR FRAGMENT (GLEICH OPERATION)*

JOHN PRENTISS LORD, M.D.
OMAHA

In 1916, Dr. Percy Roberts read a paper before the American Orthopedic Association entitled "The Influence of the Os Calcis on the Production of Valgus

Fig. 1.—Plaster models of extreme flatfoot.

Deformities of the Foot," and exhibited a plate for the control of the position of the os calcis. In this paper, the mechanics of flatfoot and the rôle of the os calcis in its production were thoroughly set forth.

It was then that I conceived the idea of the operative attack on the os calcis with displacement inward of its

* Read before the Section on Orthopedic Surgery at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

posterior portion in order to change the center of weight bearing sufficiently to correct the everted flatfoot. It was not until I began a search of the literature that I discovered the operation of Gleich.

From inquiry among my friends, I judge that few or no osteotomies of the os calcis for the radical cure of extreme flatfoot have been done in this counrty. I therefore venture to report my experience in fourteen cases covering a period of seven years. While the subject is not an original one, I feel justified because of a seeming lack of use of this procedure in this country.

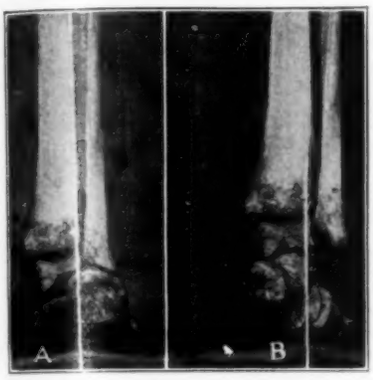

Fig. 2.—*A*, position of os calcis outside the plumb line, as in flatfoot; *B*, posterior portion of bone inside plumb line after division at its posterior third.

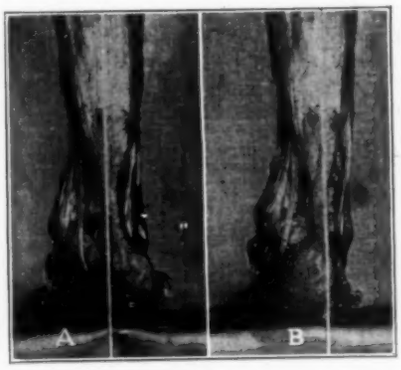

Fig. 3.—*A*, outward deviation of Achilles tendon as in all cases of extreme flatfoot; *B*, improved alinement after osteotomy.

In my work there have been fourteen cases that were regarded as sufficiently severe to warrant radical operation and in which I was able to operate. Only one case, however, had this operation only. All others had the various supplementary procedures, such as arthrodesis of the astragaloscaphoid joint, osteotomy of the tarsus, and sometimes of the metatarsals also, lengthening of the Achilles tendon, transfer of tendons in paralytic cases, and in spastic or rigid feet, tenotomies of the peroneals, or any procedure that might be indicated in the various cases.

One of the first objects to be attained in alleviating, correcting or curing flatfoot is so to change the alinement of weight bearing as to shift the center of gravity inward, and thus throw the direction of the body weight outside the centers of the feet. This is most commonly done by altered heels, by proper plates, and sometimes by surgical procedures. Attacks on the midtarsus have been useful in improving the arch and in carrying the pronated forefoot inward; but to obtain correction of the eversion, the skeletal deviation of first importance, attack on the os calcis becomes necessary. The operation of Gleich—osteotomy of the os calcis, and the displacement inward of the posterior fragment —changes the line of weight bearing as much inward as necessary to throw the balance of weight bearing to the outer side of the gravity center, and causes the weight transmitted through the foot to be thrown through its outer border, and thus relieves the longitudinal arch.

The technic as early practiced by me has varied little from the first, and consists in a curved incision a finger's breadth behind the external malleolus. A thin, broad chisel is driven obliquely through the bone, the lower edge of the chisel held 1 cm. or more forward. The posterior fragment of bone becomes so easily mobile, after having been pried loose, that it is easily held in the desired degree of correction, as the plaster is applied, experience having shown that a nail is unnecessary, just as other operators in this field have concluded. So far, my cases have been of the most extreme degrees of valgus; and tarsectomy, sometimes multiple, as well as the various modeling operations, with any supplementary procedures necessary, have been done to overcorrect the pronation completely and wholly, as well as the eversion in these extreme types. The finished plaster dressing shows the feet to be in extreme varus. After four weeks in unilateral cases, and eight weeks in bilateral ones, adhesive tape is applied to the feet, and high arched plates are placed in the shoes (in unilateral cases) and crutches used. If the feet are maintained too long in the overcorrected position in plaster, they are slow to resume their normal position, and disability is prolonged. Although from six to nine months' disability may be expected in bilateral cases, it should not exceed three to six months in unilateral cases. In a patient recently operated on, walking was painless after six weeks.

In cases requiring more than one-third inch displacement, it has been necessary to curtail the sharp external cut edge of the bone on the proximal fragment, by the use of a chisel. A wedge osteotomy excision of bone may sometimes be done to meet more fully the necessities in special cases.

A convincing proof of the value of osteotomy of the os calcis and its effectiveness in overcoming the faulty mechanics in valgus, has been my experience in having overdone two cases. One of these was that of a young woman with a bow in the leg just above the ankle, the subsequent correction of which by supramalleolar osteotomy resulted in an ultimately perfect result.

Fig. 4.—Examples of flatfoot.

LITERATURE

Garrè and Küttner[1] say: "In severe long standing cases of flatfoot which can no longer be otherwise cor-

1. Garrè, K., and Küttner, H., in von Bruns, P.: Handbuch der praktischen Chirurgie, Ed. 4, 1: 1207, 1914.

rected, a variety of operations on the bones has been practiced."

Golding Bird was the first to remove the navicular. Vogt and others after him excised the entire astragalus. Ogston [2] resected the head of the astragalus and the

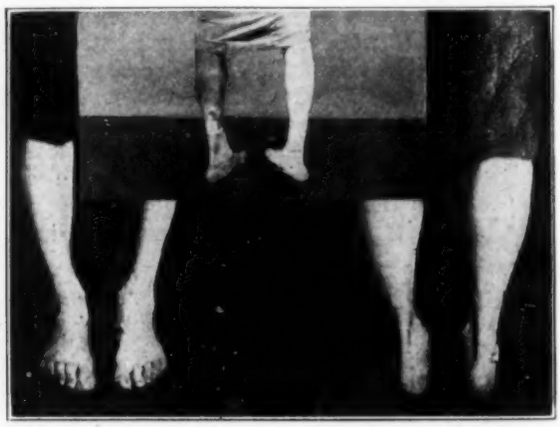

Fig. 5.—Flatfoot before and after operations, including osteotomy.

articular surface of the navicular and then produced synostosis between the two bones by bone suture. This operation has been repeated many times with success. Stokes resected a wedge from the head and neck of the astragalus. Schwartz chiseled a wedge out of the inner side of the foot regardless of the articular surfaces, but generally removing the articular surface of the astragalus and the entire navicular.

The exponents of all these operations call the results satisfactory. Garrè and Küttner's wedge resection seems the most practical in that it is directed at the deformity present in the individual case, rather than at any particular articulation, although it generally takes in the region of the astragalonavicular joint. It has been successfully practiced many times in von Bergmann's clinic. The bone surfaces may be united by metallic sutures, but suture is by no means necessary.

Fig. 6.—After osteotomy in a paralytic case with tendon transfers.

To produce an approximately normally shaped foot in the more severe cases, which cannot be otherwise corrected, Perthes has suggested the so-called modeling osteotomy. He attempts to restore the lost longitudinal arch by bringing the front part of the foot into adduction. He excises a wedge from the lower and inner surface of the navicular with the base of the wedge below and medial. The anterior portion of the calcaneus is then split by osteotomy, and the wedge from the navicular is inserted. The technic is as follows: The navicular is exposed by a small incision. On its lower surface, the insertion of the tibialis muscle with the adjacent periosteum is pushed back. With a flat chisel, two converging cuts are made into the navicular so that the base of the wedge measures from 1 to 1.5 cm. and its length about 3 cm. This wedge is then implanted into the calcaneus on its outer aspect through a horizontal incision, the center of which lies about a thumb's breadth (from 1.5 to 2 cm.) below and in front of the malleolus. The peronei and the extensor communis digitorum brevis are carefully avoided, and the anterior portion of the outer surface of the calcaneus is exposed. The calcaneus is chiseled through at right angles to its long axis about 1 cm. posterior to the calcaneocuboid joint. The peroneus tendons are first lengthened by Bayer's "stair incision." The foot can then be adducted and supinated. The wedge shaped defect in the navicular disappears, and a cleft opens up in the calcaneus, into which the wedge of bone from the navicular is inserted with base up and apex down.

Wilms [3] recommends for moderately severe cases ankylosis of the astragalonavicular joint in order to prevent slipping of the astragalus forward and inward on the calcaneus. He also combines this arthrodesis with simultaneous wedge shaped bone resection from the anterior portion of the head of the astragalus, the base of the wedge lying downward and inward. This excised wedge is then planted into the outer side of the foot into the articulation between the calcaneus and the cuboid. In its new location, the base of the wedge lies externally. In the more severe cases, Wilms "corrects" the relation between the astragalus and calcaneus by excising the articular cartilage between these two bones. This arthrodesis is done through two horizontal incisions. This arthrodesis prevents slipping of the astragalus and turning over of the foot.

Fig. 7.—After operation in a paralytic case: anterior and posterior views of same foot.

Kruckenberg and W. Müller have also introduced procedures based on the same principle of wedge and osteotomy and reimplantation. In all the operative procedures on the bones mentioned above, the elasticity of the arch of the foot is sacrificed. A series of operative procedures aims at the avoidance of this sacrifice.

In the operation of Trendelenburg [4] and Hahn,[5] the tibia and fibula are divided just above the ankle joint through two incisions, one lateral and one medial. The foot is then adducted into normal position, or overcorrected and placed in plaster fixation. The subsequent treatment is that of a bimalleolar fracture. Only the valgus position of the foot is corrected by the operation, and yet Trendelenburg states that the arch of the foot becomes restored in younger patients of the

2. Ogston: Brit. M. J., 1884; Lancet **2**, 1884.

3. Wilms: Tr. Chirurgenkongress, 1913.
4. Trendelenburg: Arch. f. klin. Chir. **39**.
5. Hahn: Tr. Chirurgenkongress, 1889.

less rigid type of flatfoot, whereas, in the longer standing and rigid cases, no such recovery is noted. In the so-called pes reflexes, in which the foot is turned only slightly outward but has a prominent inner side, Hahn considers the Trendelenburg operation insufficient. He recommends for these cases a combination with the Ogston operation (described above) or the Ogston operation alone. The favorable results following the Trendelenburg-Hahn operation have been confirmed by various operations.

Gleich[6] exposes the calcaneus through a stirrup incision (like that for Pirogoff's amputation) and saws obliquely through the bone from below and in front to above and posteriorly. Then the lower and posterior half carrying the tuberosity is slid forward and downward. Thus, the angle between the axis of the calcaneus and the ground is increased. Beyond a certain point, this anterior displacement fails to "stay put." If this amount of correction is not sufficient, it may be increased by additional excision of a wedge of bone with base downward from the anterior end of the lower fragment. If the calcaneus lies in the valgus position, the posterior calcaneal fragment must be slid not only

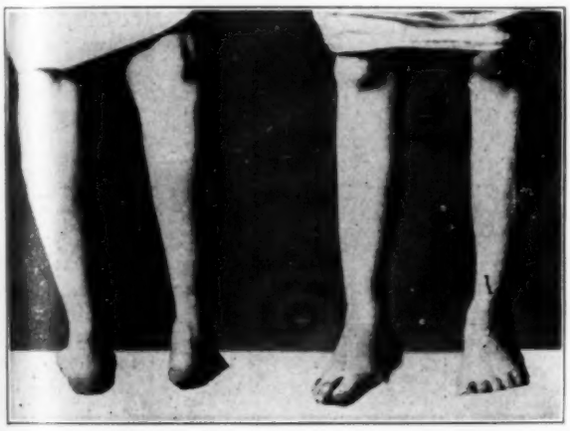

Fig. 8.—Anterior and posterior views of an extreme case of paralytic valgus, right foot. This also shows overcorrection of flatfoot deformity.

downward but also inward. Gleich's operation may be carried out from a lateral incision (chisel ?) as well as from the stirrup incision. The lateral incision has the additional advantages that the plantar muscles and fascia are spared and no scar is left on the sole of the foot.

On account of the great importance of Gleich's operation in the estimation of Garrè and Küttner, the details will be further outlined: In Eiselsberg's clinic (as reported by von Frisch[7]) an oblique incision is made a finger's breadth behind the external malleolus. This incision divides skin, fat and fascia, the Achilles tendon, and the periosteum of the calcaneus. The soft parts are retracted by two sharp hooked retractors. With a broad, flat, sharp chisel, the os calcis is so divided that the cut surfaces are smooth and without bone splinters. Through the interval thus produced in the bone, the periosteum on the inner side is cut with a sharp knife so that the detached fragment is freely mobilized. It is recommended that the posterior fragment be slid downward and forward about a small finger's breadth (1.5 cm.) and also inward, but to a lesser degree. When in the desired position, the fragment is fastened with a nail.

6. Gleich: Arch. f. klin. Chir. **46.**
7. Von Frisch: The Gleich Operation.

The method as described is substantially that used by Brenner, with the exception that Brenner makes his oblique incision on the medial side of the os calcis in order to avoid injury to the vessels (!!). The incision is made a finger's breadth behind the internal malleo-

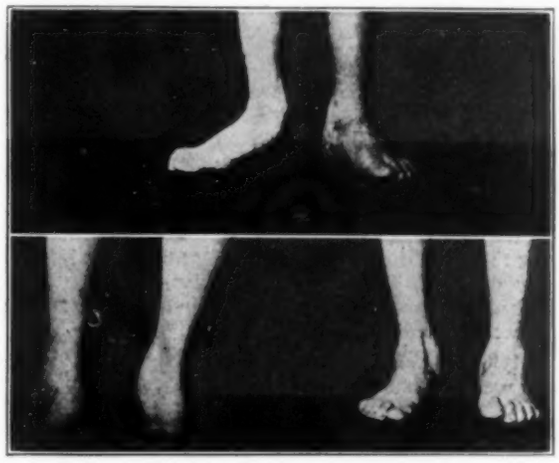

Fig. 9.—Three views of a paralytic valgus foot. The other foot shows the effects of its increased burden, it having developed moderate valgus.

lus. Brenner considers the inward displacement of the posterior fragment to be the principal consideration. He generally avoids Achilles tenotomy by placing the foot in plantar flexion (!).

Riedl[8] reports that Brenner fixes the fragments in no way and produces the necessary correction after the limb is in the plaster cast (!). The cast is removed in three or four weeks.

The results with the various modifications of the Gleich operation are excellent. A new pedal arch is

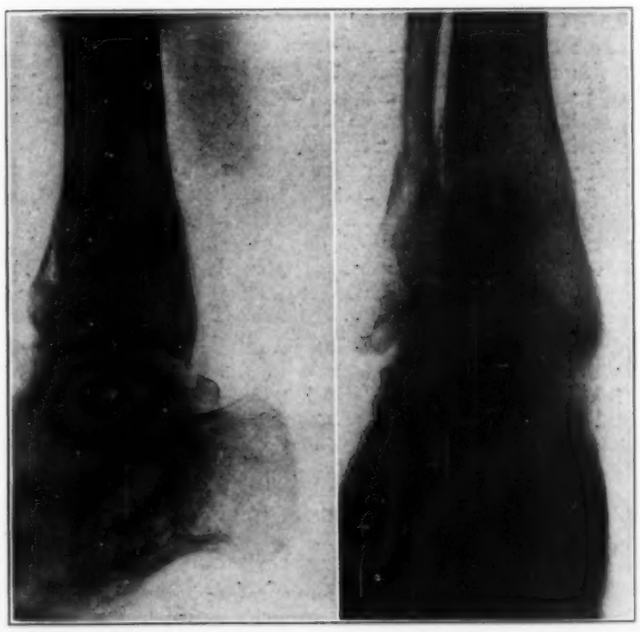

Fig. 10.—Result after supramalleolar osteotomy and deviation outward to counteract an overcorrection. The patient had a bowed leg just above the malleoli, which was corrected and the result made perfect.

finally formed, although it sometimes takes as long as a year to secure a complete result. Riedl says: "I fully concur in the statements made by the above mentioned

8. Riedl: Gleich Operation, Arch. f. klin. Chir. **8.**

authors as to the value of this simple Gleich-Brenner operation, and prefer it to all other bone and tendon operations in the more severe cases of flatfoot."

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. LOWMAN AND LORD

DR. M. S. HENDERSON, Rochester, Minn.: Dr. Lowman is to be congratulated on the results he has obtained. I have never done this particular operation. I have done the arthrodesis of the astraguloscaphoid joint, taking out a wedge bone, and in these bad cases have obtained some very good results. I can see where his method of hitching up the calcaneoscaphoid ligament will help a great deal, and using the tendon of the tibialis anticus in the manner described will further correct the deformity. Dr. Lord's operation, too, is more or less new to me. An osteotomy to correct the lateral deformity is not new to me, but the exact manner in which Dr. Lord does it is different. His results show that the operation does correct the deformity and gives stability.

DR. ARTHUR L. FISHER, San Francisco: It seems to me that the etiology of flatfoot is more simple than Dr. Lowman makes it. The main factors involved are weakness of the muscle and stretching of the ligaments. The skeletal changes are of secondary importance. Any arch requires something to hold it up, whether it is a masonry arch or an osseous arch. It requires either a buttress or a tie ligament. In the foot, tie ligaments are represented by the plantar fascia and the short flexors of the foot. If those ligaments are stretched, the arch naturally descends. The thing to do is to remedy the stretching of those ligaments. This can be done by replacing the foot, and making pressure. As it is done ordinarily, it is no better than inserting a plate, if the pressure is made upward. If we attempt to get a shortening of the ligaments that way we shall fail. If, on the other hand, we make downward pressure, on the dorsum of the foot, than the plantar fascia will wrinkle, and it will gradually shorten, if the foot is maintained in plaster of Paris. That is the essential thing in the treatment. The reason so many plates fail is that they stretch the plantar fascia, and when the plate is removed, the condition is worse than it was before. Of course, muscle training must be given when the plaster of Paris is removed. It is highly essential to differentiate between the rigid flatfoot and the flexible one. Rigid flatfoot is due to arthritis, and that condition should be treated. Another thing I am going to take exception to in Dr. Lowman's paper is the operation in flatfoot merely for the cosmetic effect. It is hardly justifiable to operate on flat feet simply because they are flat, if they are symptomless. With the operation itself I have had no experience, but I think it is a very ingenious one and in a case that is suitable for it, it will do all that is expected of it. The only thing that strikes me is that it is a very extreme procedure for a condition than can be corrected by other methods.

DR. H. WINNETT ORR, Lincoln, Neb.: I have not employed Dr. Lowman's operative technic in such cases, but he has offered us some very valuable suggestions along the line of treatment of disabled and deformed feet of this character. I wish to call attention to two points mentioned by Dr. Lord. I had an experience with three industrial cases, fractures of the calcaneum with very severe pronation of the foot. The disability extended over periods of from one week to several months after the accident. All three patients were either claiming or about to claim rather large amounts of compensation as the result of their disabilities. In all these cases I did procedures similar to those Dr. Lord has described. Dr. Lord, and the majority of those who have written on this subject, stated that no control by means of a nail or any other mechanical means is necessary. With that statement I find myself not in accord, because in my cases, and in those following fracture, or in any other condition in which there is a considerable amount of spasm of the Achilles tendon, there is great danger of not being able to control this posterior fragment of the os calcis unless a nail or a pin is used. In the three cases in which I did this operation, or an operation resembling it, I found it was necessary to use a nail to control the fragment and keep it down where it belonged. One man had a fracture existing several months with outward and upward displacement, severe deformity and disability, and in that case I used only a nail to hold the fragment down. In two cases, plaster of Paris had been employed originally in a fairly skilful manner, but in all of the cases there had been a complete failure to keep the posterior fragment in correct position. I believe it will be found that control of the fragment by a nail is very simple and involves no particular risk, and makes the progress of the case much more certain than if the nail were not used.

DR. FRANK LOWE, San Francisco: I think we operate many times too frequently for flatfoot. The patient is subjected to unnecessary chances for infection. Exostoses may prevent correction, and then operation is indicated. Correction may be effected by forcing the scaphoid back into position, thereby lessening the calcaneoscaphoid space. Mild or flexible types of flatfoot, properly padded with good absorbent cotton, can be held corrected by an assistant, skilfully trained, and placed in plaster-of-Paris dressings by the surgeon. Rigid flatfoot and traumatic cases can be corrected forcibly with the osteoclast, and then application of plaster of Paris. The bottom of the plaster cast is reinforced like a rocker beneath the arch. The patient will not miss the ankle joint in walking, and the plaster softens beneath the foot and further corrects the flatfoot by forcing the convex surface of the plaster upward under the arch. Patients are allowed to walk daily. At the end of four weeks the casts are removed. A drawing is made of the feet, and from these diagrams a pair of felt arch supports are made. Feet are retained in corrected position by second casts until arch supports are ready. These felt arches are flexible, and allow normal foot movements. There is no steel shank present. Flatfoot is not due to stretching of ligaments and plantar fascia. It is necessary to have a weakening of the tibialis anticus muscle. The latter muscle, owing to overweight, lack of exercise, faulty development of bones in mediotarsal-tarsal regions, becomes weakened, overstretched and atrophied. The peroneus group of muscles are contracted and sore. The plantar fascia acts like a bow string, and causes the anterior two thirds of the foot to abduct. The weakened tibial muscle allows the arch to buckle downward and inward. White fibrous tissue, of which the ligaments and plantar fascia are composed, does not stretch. Atrophy of tibialis anticus muscle can be demonstrated by palpating along the outer border of the crest of the tibia. Placing the feet in a properly applied plaster-of-Paris dressing allows the muscles to recuperate. Many cures are effected by wearing felt arch supports and straight last shoes with shanks strong enough to support the body weight.

DR. W. G. STERN, Cleveland: These two papers attack this problem from two different angles. One operation raises and pulls up the bow of the arch, and the other operation adjusts the posterior buttress so that the arch is again reformed. I have had some experience with an operation similar to Dr. Lowman's. I did not transplant the tendon of the tibialis anterior in the ingenious way he does. I think Dr. Lowman's operation is safe and sane, and I can heartily second his recommendation for its use. It seems to me that not enough stress was laid in one paper on the influence of the muscle buttresses and muscle contracture in causing the type of flatfoot for which Dr. Lowman's operation is most suitable. I should think his operation was more suitable in juvenile congenital flatfoot than in the flatfoot of adults, especially that seen as the result of trauma. I have found that practically all the muscles of the foot in the more severe types of congenital flatfoot act in such a manner that they increase the amount of displacement of both the front and back halves of the foot, and that the tibialis anticus, as well as the extensors communis and peronei, were tight and acted as abductors. Many times a plaster-of-Paris cast applied after the manner of Dr. Fisher, is all that is necessary to correct; but if that is insufficient, then an operation, such as proposed by Dr. Lowman, possibly amplified with the lengthening of the Achilles tendon in the proper fashion, will effect a cure. I am sure Dr. Lowman did not mean to give the impression

that he operates merely for appearances. Many of these patients are badly disabled. In cases of a twisted foot in adults, especially after fracture, Dr. Lord's operation is the solution. A fracture of the os calcis is one of the most disabling deformities a workman can get on account of the pes planus resulting. In caring for fresh fractures of the os calcis, we should take the fragment to which the Achilles tendon is attached and turn it inward and pull it downward. We must be sure to get the posterior fragment downward and inward, to avoid later disability.

DR. E. W. CLEARY, San Francisco: It seems to me that Dr. Lowman's operation is mechanically correct and very carefully worked out. I want to speak particularly of old fractures of the os calcis. I have seen a great number of such fractures, with extreme degree of deformity and disability. I believe that very few fractures of the os calcis are efficiently reduced in their recent stage. I have felt that there has not been, up to the present, any treatment either surgical or conservative, that would relieve the extreme disability following an old, unreduced fracture of the os calcis, and I cannot see that either of the operative procedures under discussion fully solves that problem. The procedure described by Dr. Lord will undoubtedly correct the pronation deformity, but in my experience the great factor in the disability, after an old unreduced fracture of the os calcis, is the almost absolute loss of lateral mobility in the subastragaloid joint. I hope that some one will find a procedure that will restore, to a degree, at least, the lateral mobility that is lost, and relieve the pain that is consequent on the loss of lateral mobility in the subastragaloid joint after old fractures of the os calcis. I believe there is coming into more general recognition a treatment of recent fractures of the os calcis by traction with ice tongs, which method, I believe, tends to overcome the widening and the loss of lateral mobility.

DR. CHARLES LEROY LOWMAN, Los Angeles: I tried to be specific in stating that we were dealing with a particular kind of flatfoot, cases that were absolutely incurable after many years of conservative work. I do not think that there is any more conservative man, from the standpoint of operative work, than I am. I had done work a long, long time by corrective and preventive means before I ever resorted to operation.

DR. JOHN PRENTISS LORD, Omaha: My work had practically all been finished and my conclusions arrived at before I discovered the literature which is given in my paper. All my patients were adults. The flatfoot had existed for a long time, sometimes from childhood, and definite structural changes were present in the bone. Many of them were so-called osseous flatfoot.

Fig. 1.—Appearance of V. J., at age of 3, after fracture and rotation of both humeri.

Malaria Control at Low Costs.—The International Health Board conducted a series of demonstrations in small towns in Arkansas and Mississippi, in cooperation with the state and federal authorities, in 1916, to determine whether a small city, a town or a rural area could be protected against malaria at a cost that the local population could afford. The result of these experiments was so successful that for the season 1920 widespread demonstrations were begun under the joint auspices of the local government, state health departments, the U. S. Public Health Service, and the International Health Board. The program for 1922 included thirty-four county-wide malaria control demonstrations and thirty-two town demonstrations in ten states, which afforded proof that under normal conditions an average community can practically rid itself of malaria at a per capita cost of from 45 cents to $1 a year.

ARTHROGRYPOSIS MULTIPLEX CONGENITA *

WALTER G. STERN, M.D.
Orthopedic Surgeon, Mount Sinai and St. John's Hospitals, Cleveland, and Surgeon in Chief, Gates Hospital for Crippled Children, Elyria, Ohio
CLEVELAND, OHIO

Having had under my care, in recent years, four cases of congenital, multiple, incomplete fibrous ankylosis of the joints of the extremities, with complete extension of the arms and legs (Fig. 1), not due to muscle or tendon contractures, and having recently seen several additional cases of a similar nature at the clinic of Dr. Chatterton at Phalen Park, St. Paul, I feel impelled to present this condition to the profession at large, as a constant, characteristic and real—though rare—medical entity. It is unfortunate that I have not found a shorter term to describe this deformity adequately, but it is likely that a shorter name will suggest itself to the reader and to the critics who might review this paper.

The principal characteristics of this condition seem to be a congenital limitation of motion in all the joints of the body except the maxillary joints and the vertebral column; a characteristic rotation deformity of the arms (inward) and the thighs (outward), and a fusiform or cylindric shape to the elbows and knees, the latter of which are extended, while the wrists are flexed, the hands compressed and the feet twisted. The head and neck are not deformed or compressed, though there is a marked atrophy of the muscles of the shoulder girdle. The limitation of motion does not seem to come directly from malformation of the joint surfaces (as in one of my cases at least 25 per cent. increase of motion was obtained in the shoulders, elbows, hips and knees by daily passive motion and physiotherapy alone), nor is it due to multiple congenital contractures of the muscles and tendons, as these do not exist. One patient presented a congenital dislocation of the hip, while another had subluxation of both tibias. With the exception of these two conditions, the roentgenograms showed no marked abnormalities of the joints (Figs. 4, 5 and 6).

The capsule of the joints and surrounding tissues, especially of the knees and elbows, seemed unduly thickened (elbow, Fig. 4).

The limitation of motion in the joints is quite characteristic; motion in the joints is quite free and unimpeded for a few degrees to either side of the center of the arc of motion. Beyond this, both active and passive motions are impossible. Motion does not set up any tension or contractures in the tendons controlling joint motion. Owing to the limitation of voluntary motion, the musculature of the limbs is not well developed. In no case was there any genuine loss of nerve or mus-

* Read before the Section on Orthopedic Surgery at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

cle function demonstrable. As far as they could be demonstrated in such subjects, all reflexes and sensations were normal.

The special senses reacted normally to efficiency tests, but the children seemed somewhat backward in their mental development. Only a few of the older children seem to have acquired the ability to walk; all can sit up. The child whose condition is shown in Figure 1 did not sit up or walk until over 3 years of age. The head and neck are not malformed and are well developed. This child and the one shown in Figure 2 have a marked atrophy of the muscles of the shoulder girdle. The arms are rotated inwardly at the shoulder joint; abduction and adduction, and flexion and extension are each possible but only to about 5 or 6 degrees. The elbows are fusiform and symmetrically enlarged; the olecranon points almost anteriorly, and the joint is habitually held almost completely extended. The relative length of the arms is normal, in contradistinction to that of the lower limbs.

Fig. 2.—Appearance of C. C. (courtesy of Dr. Chatterton of St. Paul).

The bones of the forearm are rotated, though not deformed, and the wrist is held pronated and semiflexed, while the hands and fingers are compressed so that the fingers in the early cases are gathered together into a point.

The thumbs of the colored child are adducted so far that they seem to come off at a right angle. The flexors of the elbow and the fingers, the triceps and pectoral muscle and the muscles of the hands and feet do not present contractures.

The lower limbs are relatively short, and the hips are held extended and rotated outward about 60 degrees: about 10 degrees of flexion and abduction are possible. One case presented a congenital dislocation of the hip; another presented a subluxation of the tibia. The knees are turned outward and held fully extended; about 15 degrees of flexion is usually possible. The feet are small and twisted, the toes short, pointed and compressed (Fig. 3, left foot) but not at all typical of congenital clubfoot. There is a dimpling of the skin over the elbows and over the patella (Fig. 3, right knee).

There are at least three etiologic possibilities for this condition: (1) maldevelopment of the ovum or the fetus; (2) intra-uterine joint disease—periarthritis, or (3) intra-uterine pressure and forced intra-uterine positions.

The position and shape of the hands and feet are evidently those of a forced and long continued intra-uterine position. The dislocation of the hip, the genu recurvatum and the cramped position of the fingers all speak for untoward intra-uterine pressure as an etiologic element. Against this, however, are the marked limitation in the motions of the joints, the thickening of the capsule and the tissues surrounding the elbow and knee joints, the wasting of the muscles, and the absence of permanently contracted flexor muscles such as is seen in undoubted cases of intra-uterine contractures. The knee and elbow symptoms all speak for some form of inflammation about the joints, possibly some intra-uterine periarthritis. The deformities are too symmetrical and too regularly distributed to be the result of abnormal embryonic growth. It is more than likely that these cases are the result of a rare combination of both the intra-uterine periarthritis and intra-uterine pressure.

Every form of treatment so far applied in any of these cases seems to be ineffective in increasing greatly the arc of motion of the affected joints. Numerous open operations done on my oldest patient (at other hands) in no way restored the ability to walk or increased the useful range of motion or strength to the upper extremities.

In the second case (the colored child), osteoclases to the humeri, to both bones of the forearm, the femurs and both bones of the leg permitted both the upper and lower extremities to be rotated into their normal planes, while physiotherapy, massage, gymnastics and exercise over a period of two years has increased somewhat the range of motion to the shoulders and elbows. This is the case in which the muscles of the neck and the shoulder girdle are almost entirely absent; and yet, even were they present, the useful range of motion to the shoulders would be small. The deformities of the hands and feet can be corrected by redressment.

Fig. 3.—Characteristic appearance of the arms; rotation of left femur, pointing of toes of left foot, left varus and dimpling of skin over right patella (courtesy of Dr. Chatterton of St. Paul).

These patients can be taught to do some useful things with their deformed hands, but the chances for making them self supporting are, indeed, very small. It is my opinion that these children are all good subjects for custodial institutional care; the work and the facilities could thereby be brought directly to the patients, and in this way they might be made to contribute something toward their support.

NOTE.—In order to get an accurate idea of the relative frequency of this deformity, the author would be very grateful if the reader would kindly report to him any cases which have come under his observation.

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ABSTRACT OF DISCUSSION

DR. WILLIS C. CAMPBELL, Memphis, Tenn.: I have seen two cases of this condition. It may be not only general but also local. I have seen cases in which there were similar deformities in one or more joints of the lower and upper extremity, and, in some instances, associated with other anomalies, such as congenital dislocation of the hip. One of my patients had extreme club feet and club hands. The

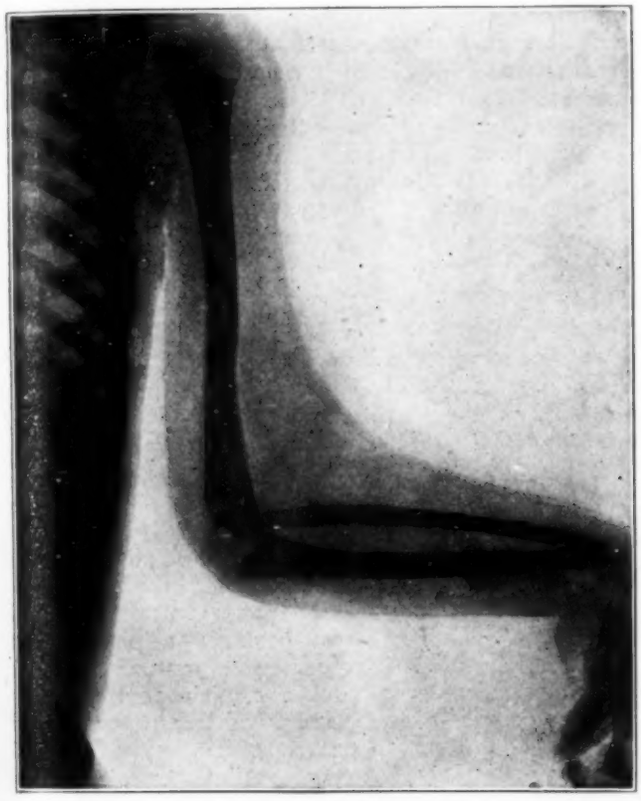


Fig. 4.—Shoulder, elbow and wrist of V. J.

knees were blocked at about 40 degrees; they were very useful members, however, and he could get about very well so far as his knees were concerned. I simply did a rather radical operation on the club feet and on the club hands. This boy was not nearly so severe a type as the subsequent case we had. On the club hand we did a resection operation at the wrist, and removed some carpal bone so as to give him an extended wrist, and we were able to relieve him to a considerable extent, so that he will be able to return to the ordinary public school and continue life as a practically normal individual. Another patient had club feet and a complete anterior dislocation of the head of the radius. The radius was probably an inch or more longer than the ulna, and projected above the joint. I thought it was probably blocking the joint. We straightened the club feet radically, and we have operated on one elbow, trying to do a reconstruction operation there, possibly to give the boy a more useful joint. His elbow was blocked at about 140 degrees, so that it was impossible for him to get his hand to his mouth. Both hands were extremely pronated. I removed a portion of the upper extremity of the radius. I thought possibly that was the cause of the blocking. It was not, however, and required a more extensive dissection on the joint, so as to obtain better function. We also did radical procedures in the hand and at present he has a fairly useful elbow. He is still under treatment in the hospital. I feel that a great deal can be done for these children by successive operative procedures. There is no precedent to follow. We simply have to do such a reconstruction operation as may be required by the anomalies in each individual.

DR. G. J. MCCHESNEY, San Francisco: This is undoubtedly a clinical entity. I have under observation now a case in which the elbow contracture is most marked, the contracture being less in the legs. There is a marked compression deformity of the thorax. The sternum is depressed; the whole thorax looks as if it had been squeezed tightly. The patient is a new-born infant; perhaps older children do not show this thorax deformity on account of the expansion by respiration during the early years of life.

DR. F. J. GAENSLEN, Milwaukee: The condition described is unusual, and interesting from the standpoint of etiology I had not known of this condition until quite recently. I can fully agree with Dr. Stern in assuming that the condition is due largely to intra-uterine pressure. I also feel that the picture is not necessarily constant, but one that may vary, depending on the intra-uterine position. In a case I saw the position was practically that discussed by Dr. Stern, except that the knees were in flexion. Motion at the shoulders and hips was considerably restricted. As the patient was only 3 months old and the numerous skin folds and creases due to intra-uterine position were still present, there was no difficulty in "packing" this infant into the exact position it occupied in the uterus—with the arms rotated inward, the olecranon on each side pointing forward, the elbows almost fully extended, the hips completely extended, the knees acutely flexed, and the leg crossed behind, each heel resting against the opposite buttock. The index fingers and thumb lay parallel in full extension and in close contact with one another. There was definite flattening of the apposed surfaces of the thumb and index fingers from the long continued pressure. I wish Dr. Stern would go a little further into the position of extension of the hips and knees. If this condition is congenital, it would mean that the fetus had been in utero in the upright position, with, no doubt, some flexion of the spine. That position seems to be impossible. Contrary to Dr. Stern's cases, my own showed marked limitation of motion in the spine in extension so that when the legs were lifted up, the child being in the prone position

Fig. 5.—Hips of V. J.

on the table, hyperextension of the spine was impossible. What the factors are producing the thickening of the joints I am unable to say. It is possible that extension of the knees might be produced through long continued splinting for congenital flexion contractures. The fact that Dr. Stern found dimpling over the knees would indicate that the knees in utero had been in acute flexion. The fact that he was able to get a considerable increase in motion in the joints follow-

ing a comparatively short period of treatment would indicate that there was really no intrinsic joint disturbance of the nature of an arthritis. Dr. Stern believes that the thickening was of the nature of a periarthritis. My patient had snuffles, although the Wassermann reaction was negative. Whether syphilis might be a factor in producing periarthritis changes in utero I do not know. One other factor that may assist in explaining the fibrous ankylosis of the joints is a trophic disturbance due to continued pressure of the nerves supplying the joints involved. In the upper extremity this could readily happen by pressure of the internally rotated head against the brachial plexus.

DR. CHARLES LEROY LOWMAN, Los Angeles: It is a very serious economic situation for a hospital management to care for such a case. This year I had a case that came from a very indigent family. The child was found eating with his nose in his plate. At the time he was brought to us, both feet were turned completely backward. We corrected the club feet and the boy was able to walk very well, and he came back about two years ago. His hands are in the typical position described by Dr. Stern. I think that his argument in regard to congenital pressure holds very well because this boy had almost a complete absence of deltoids We have never been able to demonstrate any shoulder abductors.

Fig. 6.—Knees and feet of V. J.: 90 degrees of rotation between hips and knee.

DR. WALTER G. STERN, Cleveland: I purposely did not describe any cases of variations of cases in which characteristic deformity was limited to one limb. I wanted to make the point that this is a real medical entity. The variations can come later on. Many things have been done in our cases that I did not speak of. For instance, in one case we were able to trace back the whole family and had different biologic tests made — measurements, the Wassermann test, blood chemistry tests, and the many things that Dr. Goldthwait spoke of. Up to the present our results have all been negative. We measured the other children of the family of several patients and took the relative size of the trunk and the arms and the width of the shoulders and the lower ribs and all that sort of thing, and the only thing the measurements have shown is that in the affected children alone the relative length of the upper extremities is normal, while the relative length of the lower extremities is short. Dr. Gaenslen has raised a pertinent question that I do not really know how to answer. The patients I have seen have all had their knees and hips extended. One child, aged 3 months, had hips that were flexed to 5 or 10 degrees, and the knees were both extended. Both the mother and the obstetrician say that this was the condition they noticed immediately after birth. My youngest and latest patient was less than a week old. It was thought to be a case of congenital clubfoot, and when I saw the child eight days after birth, the hips and knees were at that time in extension; though there was a subluxation of both knees, with an arc of 5 or 10 degrees of motion. One of the characteristic things in all these cases seems to be that the capsule of the larger joints is thick, so that at first glance, if you only saw the photograph of the elbow, you might think you were dealing with a tumor albus. It is my opinion that the limitation of motion is due to the thickening of the periarticular tissues and not to any muscle or tendon contracture.

STONE EVACUATING CYSTOSCOPE *

RAYMOND L. SCHULZ, M.D.
LOS ANGELES

One of the difficulties in removing stones from the urinary bladder with the ordinary lithotrite is that the process is not under sufficient visual control, and it is not easy to get out all of the fragments even after they have been crushed. Residual fragments become the nuclei for further stone formation.

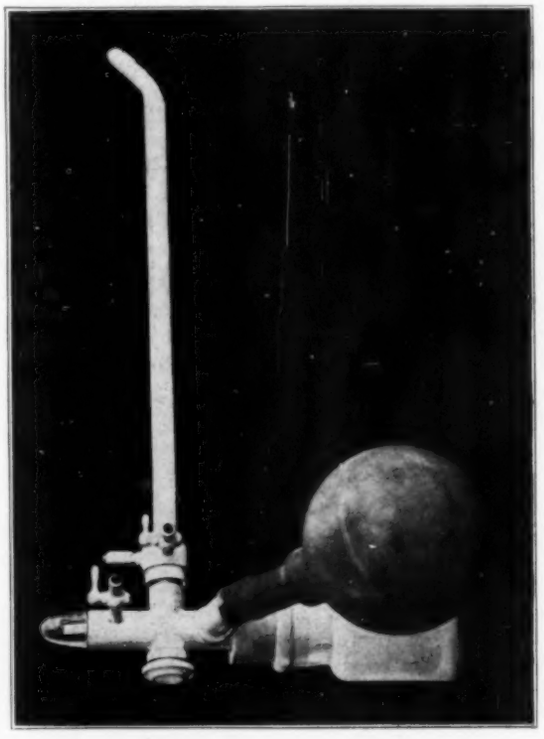
Lithotrites which embody a cystoscopic telescope are now available. Some of these instruments are of so large a caliber as to have a limited field for use. For crushing stones, the Bigelow lithotrite is still a very good instrument, and can be found in many hospitals. Most of the evacuators heretofore in use have been more or less cumbersome. The work has to be done blindly, and considerable irrigation is sometimes necessary in order to remove all fragments. Apparently no one method is applicable in all cases. The device here presented is intended to simplify the complete removal of all fragments of stone after litholapaxy.

The apparatus consists of two portions, a plain direct observation cystoscopic tube and a suction device, which consists of two tubes crossed at right angles, with full openings into each other at the point of intersection. One end of the horizontal tube fits into the end of the cystoscope. The cystoscopic window is inserted opposite it. The upper end of the vertical tube is closed with a small glass dome or cap for observation and collection of air bubbles. Escape of the air is permitted through an L tube with stopcock, which reaches to the top of the air chamber and emerges at the side of the tube. This part of the device is very essential. It keeps the cystoscopic field free from air bubbles and thus makes it possible to view the interior of the bladder simultaneously with the manipulation of the suction device. To the lower end of the vertical tube a small, clear, glass bottle is attached by means of a perforated rubber stopper. Just below the joint of intersection of the main tubes is a moderately large tube at right angles to the plane of intersection and curved downward. The strong rubber suction bulb is attached here. At the point at which this tube connects with the vertical portion is a fine wire screen which prevents fragments from entering the suction bulb.

The bladder stones are crushed in the usual way with a lithotrite. The cystoscopic tube is then inserted into

* Read before the Section on Urology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

the bladder and the major portion of débris washed out a few times by simple irrigation. When the return fluid is clear enough, the suction apparatus is attached to the cystoscope. The entire system is filled with water from the irrigator, and the air is allowed to escape from the dome. During the filling with water, the bulb is gently compressed several times so as to expel all the air. The patient's bladder should not be overdistended. The electric light is then turned on, and one gets a clear view of the inside of the bladder through the observation window. Fragments of calculi are readily located. The suction bulb is gently and completely compressed, while the other hand manipulates the cystoscope in search of fragments and brings the beak into proximity to them. Then the compression is slowly released, thus producing a strong current of water, which carries with it the fragments seen and deposits them in the bottle. The entire process is visible throughout; the stones can be seen rushing up into the cystoscope, and if a fragment does not pass readily, it may sometimes be coaxed up by alternate compression and suction, or manipulation of the beak of the cystoscope.



Stone evacuating cystoscope.

Fragments that are too large to pass through the cystoscope must be either crushed still smaller or broken by means of a long snare, which may be used in the same cystoscope through a special window. After the fragment has been broken small enough, it may be evacuated immediately through the same tube.

The snare was made from an ordinary nasal snare. The cannula was replaced by a longer tube, which was bent slightly at its proximal end in order to provide sufficient clearance to permit observation through the cystoscope. The advantage of the snare is that it may be used through the same cystoscope that is already in the bladder. It is easier on the patient to use a few minutes in placing the snare accurately over a stone than it would be to change instruments in the urethra and go fishing for the small stone with a lithotrite. For breaking some of the smaller bladder stones, Dr. Young's cystoscopic rongueur is very useful and easier to manipulate. The latter instrument could be improved considerably by reversing the handles. As it is, with beak and handles on opposite sides, it is awkward to manipulate.

The cystoscopic tubes were specially made for this purpose. Other tubes were tried but found to be unsatisfactory. It is very necessary that the tube have an unobstructed lumen and be of sufficient length to reach well into the bladder. The stopcock on the side of the cystoscope has been made exceptionally large so as to facilitate rapid filling of the apparatus when in use. Special operating windows will permit various other intravesical procedures through these cystoscopes.

By means of this cystoscopic evacuator, it is possible to clean out all fragments of stone more quickly and leave the bladder in a less traumatized condition than if stronger evacuators are used which are not under visual control. This method can be employed without a general anesthetic, if the patient's bladder is not too sensitive. The use of the lithotrite is likely to be the more painful part of the procedure, but even this need not be unduly severe if one is a little bit considerate.

With the introduction of these methods, there is no longer any excuse for suprapubic lithotomy in uncomplicated cases in which the stone can be crushed. The entire process can be accomplished readily through the urethra, and the greater portion is under visual control.

The evacuator, with a few minor improvements not shown in the illustration, is being made by the Boehm Surgical Instrument Company of Rochester, N. Y.

1020 Story Building.

ABSTRACT OF DISCUSSION

DR. PAUL A. FERRIER, Pasadena, Calif.: Dr. Schulz has used this instrument twice in my office, and I am sure that it shortens the time necessary to evacuate the fragments, as compared with the Bigelow instrument.

DR. ALBERT E. GOLDSTEIN, Baltimore: I am sure that in my work this instrument would be of value. We have used the Bigelow evacuator, but this one seems to be more applicable. The snare that is applied may cause some difficulty in that it will not crush or break large pieces, and the lithotrite will have to be reintroduced. The main point, I think, is to crush the stone at one sitting, if possible, and remove it all at the same sitting with this instrument. After the stone has been crushed, the evacuator is introduced and the crushed stone removed by observation; but if any large pieces are left, the lithotrite will have to be reintroduced. Our procedure of crushing the stones and then the introduction of this evacuator would be an ideal method. I believe that it would cause less trauma, and there would be no bleeding to obscure vision.

DR. RAYMOND L. SCHULZ, Los Angeles: Dr. Braasch emphasized the fact that the large stones can be grasped quite readily with the lithotrite. That was my intention—to grasp the large stones and then get the small fragments with this apparatus. I think that this is easier than to go fishing around with a lithotrite. The snare is not the easiest thing to use, but I have used it successfully in removing small pieces of stone and consider it superior to the lithotrite. If there is any bleeding in the bladder, that would, of course, interfere with vision when using any kind of an instrument. One would either have to wait until it subsided or resort to other measures.

Genius.—The theory that genius is a recessive trait and therefore due to the loss of something receives a certain degree of plausibility from the apparently sporadic appearance of great minds.—Holmes: Studies in Evolution and Eugenics, New York, 1923.

A CLINICAL STUDY OF URETERS*

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The ureter is a subject of great interest to the abdominal surgeon as well as to the urologist. More and more are surgeons learning that abdominal pain, either

Fig. 1.—Reduplication of ureter, complete, with double kidney; this condition is not so infrequent as was formerly considered.

right or left sided, is often caused by lesions of the ureter. In all obscure pains of this region, the condition of the ureters and kidneys should be determined. In going over my consultation records, I am greatly impressed by the patients who have been unsuccessfully operated on for abdominal pain, only to find a urologic condition present, such as stricture of the ureter, regurgitation from the bladder up the ureter, dilatation, nephroptosis, kinks of the ureter and impacted calculus.

My object in this paper is not to report any new or rare pathologic lesions, but to demonstrate just what things are discovered by routine pyelograms; at the same time, it is also urged that the ureters be more carefully studied, for such study will often clear up obscure symptoms which have embarrassed the diagnostician. The kidney and bladder have been better studied than the tube that connects them. It is an organ that has its own identity and will bear closer study in order to learn its pathologic changes and consequent symptoms.

ANATOMY OF THE URETER

Briefly, the ureter is a muscular tube with a diameter of 0.5 cm. and an average length of from 29 to 30 cm. The left one is 1 cm. longer than the right. The tube when empty is slightly flattened, with a star-shaped lumen on cross section. The caliber is not uniform, there being several points of constriction due to the circular or ring muscles; first, just below the renal pelvis; second, crossing over the iliac vessels; third, through the broad ligaments (in women); fourth, in the wall of the bladder. These divide the ureter into several clearly defined sectors.

Structure.—There are three coats to the ureter, an outer fibrous coat, a middle muscular layer and the mucosa. The fibrous envelop is very loose, and is thickest near the bladder. The muscular structure consists of an outer and inner longitudinal layer and a middle circular layer. The mucosa is four cells deep, with columnar epithelium.

Vessels.—The vessels of the ureter consist of (1) twigs from the renal artery; (2) twigs from the ovarian or spermatic artery; (3) branches from the common iliac, and (4) small twigs from the vesical artery.

Lymphatics.—These are mostly in the muscular and adventitial layers accompanying the arteries. This is a complex system. The nerves arise from the sympathetic system; hence, they give general abdominal pain, nausea and vomiting when acute lesions develop.

RELATIONSHIP OF THE URETERS TO THE ABDOMINAL ORGANS

First of all, the ureters are suspended from the kidney, a loosely attached organ lying in the renal niche

Fig. 2.—A peristaltic wave working against a kink in the ureter; such waves produce colic and simulate calculi.

or shelf; and, secondly, they are retroperitoneal. These are two important points to remember in reading ureterograms in which there are intraperitoneal or retroperitoneal growths displacing the ureters. Have the ureters a fixed course? Only approximately, lying just outside the line that marks the tips of the transverse processes of the lumbar vertebrae. The ureters

* Read before the Section on Urology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

do not adhere to the muscles over which they lie and pass, but are really incorporated in the posterior layer of the peritoneum. This also is important to remember, as in the extraperitoneal exposure of the ureter in its middle and lower third. I have seen surgeons hunt a long while for the ureter, carefully combing the iliac vessels and muscle bed when the ureter was hid-

Fig. 3.—A dilated ureter and pelvis; several kinks and angulations can be seen which produced tenderness, and a dull ache in the left part the abdomen.

den under a retractor in the wall of the peritoneum. When periureteritis takes place, the ureter becomes firmly attached to the peritoneum in places, interfering with its wavelike contractions, or peristalsis, and sharp kinks develop.

On the right side, the ureter passes directly under the head of the cecum and near the base of the appendix. This is one reason why right ureteral pain is frequently confused with that of appendicitis. We can reproduce the ureteral colic with a catheter and water, but not the appendical pain.

This retromural (peritoneal) position of the ureter is an important one, indeed. At McBurney's point, the ureter dips sharply into the pelvis, as does a rope in a well. In the female pelvis, it runs through the broad ligaments, just missing the cervix uteri as it enters the bladder wall. This relationship results in a confusion of ovarian and ureteral colic. Many pelvic operations have thus been resorted to in order to relieve a pain that was really ureteral in origin.

The importance of recognizing this relationship of the ureter is well illustrated by this case:

B. B. Z., a man, aged 25, a coal miner and former soldier, complained of a pain on the left side in the region of the kidney. The patient had no fever, and chemical examination of the blood and blood counts were normal. The roentgen ray revealed no pathologic changes either in the kidney or in the vertebrae. There were no urinary symptoms, and the only symptom noted was an area of dulness anterior in the region of the left kidney and a dull ache in the left hip and groin. A urologic study was made. No disease condition was found in the kidney glands, but the pyelogram showed a marked displacement of the left ureter toward the median line. This could mean only one thing: that there was a retroperitoneal mass pushing the ureter upward to one side. This patient later aspirated a large psoas abscess, from which he completely recovered after a long period of fixation of the spine.

PHYSIOLOGY OF THE RENAL PELVIS AND THE URETER

The calices and the pelvis are the expanded upper end of the ureter. It is the function of the ureter to receive the urine from the pyramids and propel it toward and into the bladder. The capacity of the normal pelvis is from 1 to 20 c.c., though 5 c.c. is an average; that of the ureter is from 1 to 5 c.c.

PERISTALSIS

Contraction starts at the pelvis and travels from 20 to 30 cm. a second; from three to six contractions occur in a minute. A swelling from 2 to 5 mm. long is seen, caused by the ureter being full of urine. Just back of this, the ureter is contracted from 1 to 5 mm. These contractions are influenced by the temperature, the blood pressure, the amount of urine and the nervous mechanism. Cold inhibits the contractions; so

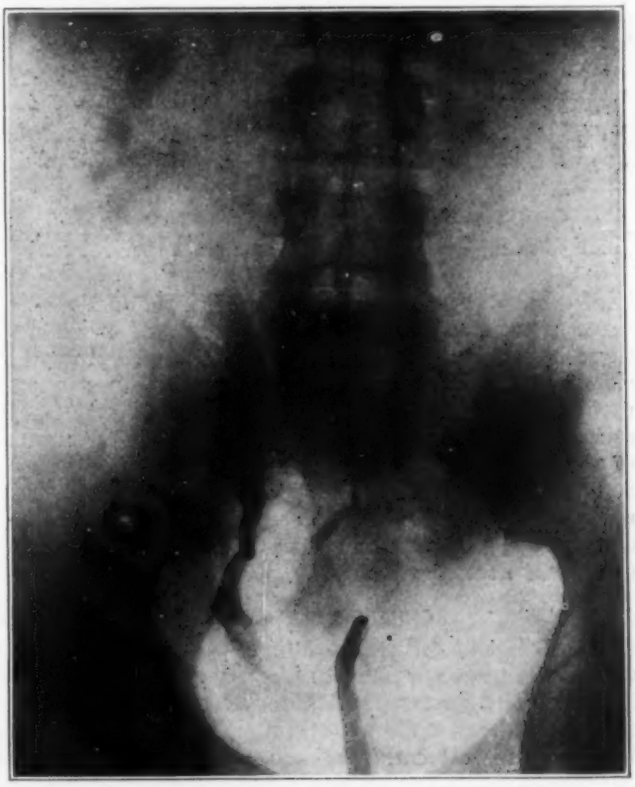

Fig. 4.—A calculus impacted in the lower third of the right ureter; the maximum tenderness was located over McBurney's point; ureteral catheterization and the roentgen ray accurately plotted this obstruction.

does cutting off the blood supply. The presence of urine is not necessary for a contraction. Foreign bodies in the ureter stimulate the contraction and give colicky pains.

This peristalsis is an automatic function of the musculature, as it has been observed in a small piece of ureter cut out, just as the heart of a frog contracts

rhythmically after its removal from the body. The contractions are from above downward. These contractions take place no matter what position the body is in, and though aided somewhat by gravity, that force has nothing to do with the normal ureter. We have the familiar examples of a greatly overdistended bladder

Fig. 5.—Hydronephrosis with pyelitis, occurring in pregnancy; miscarriage frequently occurs in these patients; an understanding of renal pathologic changes present is most important before labor sets in.

hardly capable of receiving another drop, and yet the ureters continue to project their waves of urine into these bladders, against enormous pressure. However, electrical stimulation of the ureter sometimes causes reverse peristalsis. Experimentally, Lewis and Goldschmidt have produced reverse peristalsis by filling and stimulating the bladder; accompanying this was a reflux of fluid from the bladder to the kidney. This phenomenon has often been observed in making cystograms. Disease of the vesical orifice of the ureter is not necessary.

CLINICAL CHANGES

The orifice has many variations which practice alone will enable most men first to identify, and then to catheterize. The ureter travels for 2 cm. submucously, and then dives obliquely through the bladder wall. When a ureteral catheter is inserted, this portion of the ureter frequently wrinkles up; the catheter digs into the side of the lumen, and it seems impossible to thread the loose ureter down over the catheter. An attempt to change the angle of insertion is made, and also to rotate the catheter. Frequently, however, the ureter grasps the catheter and turns with it. The next expedient is to try a softer and smaller calibered catheter. Another trick is to just insert the catheter and lift up the lip of the orifice, and then to try to insert the catheter farther. Stricture of the orifice calls for incision. Spasm of the orifice requires patience and often another sitting. The "golf hole" orifice is very easy to catheterize.

The pregnant uterus and cystocele present additional difficulty in catheterizing, as these conditions displace the orifice. In men, the interureteral ridge forms a good landmark; in women, it is frequently absent. Disease of the ureter may be indicated by an edema of the orifice, or redness, deformity or displacement. Pus, blood or calculi may be seen issuing from the orifice. Edema is often an indication of stone or tuberculosis. At times, stricture or complete obstruction of the ureter will be encountered.

SPASMS OF THE URETER

Spasms of the ureter are not uncommon, especially in the presence of foreign bodies such as a stone or a catheter. Frequently, a catheter may be inserted for 10 to 15 cm., and then stop. We withdraw the No. 6 catheter we have been using and try a No. 4 or a No. 5. Often there is no such spasm with the smaller sizes. At another sitting, the spasm may be entirely absent, and the catheter may ascend with ease.

STRICTURE OF THE URETER

Stricture of the ureter is far from uncommon. Hunner's pioneer work and classic reports on ureteral stricture are well known. He encountered much opposition,

Fig. 6.—A contracted bladder, with dilated ureteral orifices and regurgitation; a cystogram was attempted and the ureterogram resulted; not all renal infections are hematogenous; some must be ascending.

but the evidence of these cases, their pain, diagnosis and the entire relief of symptoms by ureteral dilation, has been piling up steadily until there are few doubters left. The literature from all parts of the world is being enriched by such case reports. Referring back to our anatomic review of the ureter, one sees how this is true.

Pyelitis and inflammation of the ureteral mucosa, tumors from without pressing against the ureter, adjacent inflammatory processes such as chronic appendicitis and colitis, salpingitis in women, and trauma resulting from blows to the ureter—all these and other causes frequently result in stricture. Most of them are easily stretched and dilated, and the prognosis is good, two or three dilations proving sufficient. Occasionally, one encounters strictures that are very fibrous and will not dilate. I recall one recently in which only a No. 4 roentgen-ray (stiff) catheter could be inserted. This ureter would shut off entirely, giving the patient severe renal pain from distention. A transperitoneal exposure of the lower third of the ureter was performed. The tube was dilated to the size of a lead pencil; it was tortuous, and peristalsis was gone. The ureter was incised, urine being released under great pressure. No stone was found either above or below. The stricture at the orifice could not be dilated from the ureteral side; it was very fibrous, with an edematous mucosa.

NEPHROPTOSIS

Nephroptosis, with kinks and twists of the ureter, is frequently found in routine pyelograms, which show considerable variation in the caliber of these ureters, for, as a rule, they are dilated for their entire length. The calices are also blunt, rounded and distended. With a sagging of the kidney there is also a rotation of the kidney, the outer edge of the kidney turning forward and the long axis taking a decided pitch downward. These cases are the ones giving us most of our cases of orthostatic albuminuria.

Fluoroscopic study of these ureters show them to be sluggish, as their contractile or peristaltic action is greatly diminished. Naturally, the question arises What is a normal and what is a pathologic kink? The latter question is answered by the clinical symptoms of pain, either a dull ache in the kidney region or a sharp ureteral colic, simulating calculus colic, and intestinal nausea with flatulence; there is a mild hematuria in 10 per cent., and transient albuminuria in 30 per cent., of the cases. If a ureteritis or a periureteritis has existed, pathologic kinks, those producing a pinching off with total or partial obstruction, are more likely to occur. Sagging kidneys play a very definite rôle in producing kinks and dilatations of the ureters.

CALCULI OF THE URETER

Calculi of the ureter are of all sizes, shapes and locations. As a rule, they are too large to slip from the renal pelvis into the ureter. I observed a stone the size of an almond in the renal pelvis for two years. The patient kept postponing operation, though he did submit to periodic pelvic lavage. The ureter, however, became dilated, and this stone slipped into it, lodging 6 cm. below the pelvoureteral junction. It completely occluded the ureter, and this kidney was out of action for forty-eight hours. After the stone had been removed, it was another thirty-six hours before the kidney started to function. Of course, these large stones can be removed only by ureterotomy. The smaller ones, however, can be passed by patiently dilating the lower end of the ureter. Bougies up to No. 11 French, then one or two extra ones besides these, are used if necessary. These may be left in several hours or over night. Caulk [1] reports great success by this method; he delivered eighty-eight patients with ureteral stones out of ninety-six, a very high percentage. The orifice can easily be nicked with scissors, and a stone at the orifice will drop into the bladder, where it will be voided or picked up with rongeur forceps. Renal cauculi are often mutiple, and also are inclined to recur; therefore, this method of dilation is far in advance of a cutting operation. It is the comparative small calculus that often plays the most havoc, as it completely blocks the ureter. The roentgenogram often misses them, so their presence must be determined by the catheter, the absence of function and of urine, and the existence of stoppage. A calculus can either block off a ureter, suddenly and permanently, or it can block, release a little, and block again. It is in this time that a gradual dilatation of the ureter occurs with considerable pathologic changes.

Dilatation of the ureter is both congenital and acquired. These hydroureters are often very large, resembling in size and appearance the small intestine. They stretch longitudinally also, which gives them a twist and a kink. All the coats are thickened, to which a periureteritis is added. These ureters often fill up enormously, distend, and then suddenly empty out, the patient being able to record accurately this phenomenon; that is, the relief from fulness, a distress and the sudden filling of the bladder, often with cloudy urine. The patients will often tell of the disappearance of a "lump" in their side. These ureters will often hold 100 c.c. or more. Their size and shape is accurately recorded by the pyelogram. In draining them, the operating cystoscope and a No. 11 catheter should be used. The patient should sit up in a chair; it will greatly hasten the emptying of these loose, baggy tubes. One is surprised how frequently they are found when never suspected. In not a few cases, the ureterovesical orifice loses its sphincter-like action and becomes dilated, and regurgitation occurs. In making cystograms on contracted bladders, the contrast solution is frequently found filling the ureter and even giving a very good pyelogram. In one of my cases, the soft rubber catheter employed ascended the right ureter for 10 cm. This patient, with a bladder capacity of 90 c.c., was using the ureter as an auxiliary bladder. It held as much as the bladder itself.

TUBERCULOSIS OF THE URETER

Tuberculosis of the ureter, of course, is incident to tuberculosis of the kidney, parenchyma and pelvis, or of the bladder. All the coats of the ureter are greatly thickened by the inflammatory process, and tuberculous lesions occur throughout its length, extending into the bladder. Periureteritis accompanies it, becoming adherent to the peritoneum. The lumen may be very small for the thickness of the ureter, or it may be enlarged. The ureteral orifice is frequently contracted, and catheters cannot be inserted on account of an inflammatory stricture. The orifice may protrude and may be very irregular. Tubercles are often scattered below or around such an orifice. In other types, the orifice is dilated, does not close, and is flat and round. The classic description of "golf hole" orifice cannot be improved on. When such an orifice is seen, one can always count on a very large ureter above it. A rare type of tuberculous ureter was seen recently. The kidney was small and sacculated, and looked like a small bunch of grapes; the inside was filled with a pinkish white, thick, creamy substance; there was no paren-

1. Caulk, J. R.: Megalo Ureter: The Importance of the Ureterovesical Valve, J. Urol. 9: 315 (April) 1923.

chyma. The ureter was almost entirely obliterated, appearing as a small, soft, stringlike cord. From below, the catheter just traversed the submucous portion of the ureter. No function or efflux of dyes was found.

In all nephrectomies for a tuberculous condition, when shock and other conditions do not forbid it, all of the ureter possible should be removed. Some surgeons even resect the orifice and bladder portion of the diseased ureter.

CATARRHAL URETERITIS

Catarrhal ureteritis, secondary to pyelitis, is a mucous membrane inflammatory process. This condition should be considered and treated as a part of the pyelitis. It should be remembered, however, that catarrhal inflammation of the ureter is common, and plays no small part in the formation later of stone and stricture.

CONCLUSION

There are many other lesions of the ureter which I have not taken up, as tumors (papilloma, epithelioma, hypernephroma), diverticula, surgical wounds (accidental ligations and amputations), the transplantation of ureters and the various other operations performed on ureters.

Finally, I will call attention to the commoner pathologic changes. The ureter should be thought of as a very distinctive organ, with its rhythmic contraction and function quite independent of the balance of the urologic tract. The diagnosis of its lesions and the surgery to correct them must all be considered in a separate chapter from the rest of urology. In other words, let us study the ureter more than we have in the past.

ABSTRACT OF DISCUSSION

Dr. William E. Stevens, San Francisco: One of the points worthy of additional emphasis is the fact that more than one examination is necessary in order to make an accurate diagnosis. We hear some urologists advocate a single cystoscopy and pyelography and they endeavor to make an accurate diagnosis. This, however, is seldom possible. In San Francisco the majority of roentgenologists do not believe in much preparation of the patient prior to roentgenography. Breakfast is omitted the morning the picture is taken, and if good roentgenograms are not obtained because of an excessive amount of gas, additional pictures are taken, castor oil being given the night before and no breakfast the following morning. We like the Bucky-Potter diaphragm, and take one large picture, 14 by 17, which shows the entire genito-urinary tract. If suspicious shadows are seen, we use a cone with deep compression. We also ascertain the location of the shadow in relation to the pelvis of the kidney. Roentgenography is certainly most necessary in addition to the cystoscopy to determine the presence of malformation, strictures, kinks, diverticula and other conditions in connection with the ureter. We find stereoscopic pictures most advantageous when the shadow is in line with the ureter.

Dr. Herman L. Kretschmer, Chicago: The phenomenon of regurgitation is possible in normal patients, without disease of the urinary tract, and was demonstrated some years ago in children and also in adults. This phenomenon is possible also in pathologic cases in which the action of the uretro-vesical valve has been destroyed by disease. There is need of close cooperation between the roentgenologist and the urologist, and that is what we are all trying to do—to get the roentgenologic unit and the cystoscopic unit into very close proximity.

Dr. John W. Marchildon, St. Louis: I am a urologist and not a roentgenologist, and so far stereoscopic views have been more or less unsatisfactory with us. We have found that the single pictures, 8 by 10, using the cone that produces the most detail, have been the best, taking into consideration those principles that have to do with compression of the soft parts. It seems that this is not well understood, and there is very little in the literature about how to produce pictures of soft tissues with the roentgen ray, and so we use the cones rather than the Bucky-Potter diaphragm. We have used the Bucky-Potter diaphragm only when taking a large, square picture, and for very sick persons, or when there is a painful abdomen. It is not used often enough to necessitate our building a Bucky-Potter diaphragm into the cystoscopic table.

THE TREATMENT OF SEPTIC MENINGITIS BY CONTINUOUS DRAINAGE *

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AND
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Recovery from septic meningitis developing after skull fracture or, indeed, from any other cause, is sufficiently rare to justify the reporting of illustrative cases. In the present instance, we find further reasons for publishing the reports of two cases in the facts, first, that previous accounts of the therapeutic methods employed have not attracted the attention of the profession which they deserve; and, second, that in one of the cases a simplification of technic which promises to popularize the method was introduced.

A survey of the literature discloses that spinal drainage, or drainage combined with irrigation, is no novel procedure in the treatment of meningitis. During the last fifty years there have been numerous accounts of its use in some form or other, and at a number of different points in the skull or vertebral column. It is scarcely necessary to give a detailed summary of the literature on the subject for the reason that cases were too few or else results too unsatisfactory for the forming of definite conclusions on the most promising method. So we shall here make reference only to those contributions which have a bearing on our cases.

In a discussion of his experience in treating cases of head injury during the Civil War, Gross [1] of Philadelphia, in 1873, made the statement that an effusion of pus in the arachnoid space is a purely surgical condition, and, like any other pus collection, should be treated by drainage. An English surgeon, Wynter,[2] in 1891, published accounts of four cases of meningitis which were treated by drainage. Two of these are worth mentioning. In one, laminectomy in the lumbar region was done, and a rubber tube was inserted beneath the dura; in the other, an India rubber tube was introduced into the arachnoid space through a trocar, and held in place while the latter was withdrawn. Drainage continued for twenty-four hours in the latter case, and until death three days later in the former. It is interesting to note that these operations (1889-1890) antedated Quincke's [3] contribution on lumbar puncture. Following Wynter's publication, there are numerous accounts of drainage with both favorable and unfavorable consequences, chiefly the latter. One report which is well worth reading is that of Rolleston and Allingham [4] (1899), whose case of meningitis (probably

* From the Department of Surgery, Washington University Medical School, and the wards of the St. Louis City Hospital.

1. Gross: Am. J. M. S. **66**: 40, 1873.
2. Wynter, W. E.: Lancet, May 2, 1891, p. 981.
3. Quincke: Verhandl. d. Cong. f. inn. Med. **10**: 321, 1891.
4. Rolleston and Allingham: Lancet **1**: 889, 1899. A review of the literature is given by Haynes: Laryngoscope **22**: 865, 1912.

meningococcic) resulted in recovery after lumbar laminectomy with drainage.

Especially noteworthy is the work (both published and unpublished) of certain St. Louis surgeons. In 1907, Kirchner,[5] in a case of meningitis that developed some days after skull fracture, reopened the cranial operation wound and on several occasions irrigated with salt solution the entire arachnoid space, introducing the solution through a needle in the lumbar region and allowing it to escape through the cranial opening. Large quantities of blood and pus were washed away, and the child eventually recovered. Leighton and Pringle,[6] in 1915, performed a lumbar laminectomy and instituted drainage with success in two cases of streptococcus meningitis that followed head injury. In 1921, Hill [7] reported two additional successful cases. July 29, 1922, without knowledge of Wynter's cases, Babler,[8] in a case of pneumococcus meningitis following a severe skull fracture, inserted a rubber catheter through a trocar and withdrew the latter. Recovery ensued. We also have information with regard to a number of other instances in which drainage was resorted to, but, unfortunately, without success. These cases were all in late stages of the disease, and in some instances, at least, drainage was not as free as could be wished. They will be referred to again in another connection.

REPORT OF CASES

CASE 1.—W. M., a white boy, aged 13 years, admitted to the St. Louis City Hospital after a 60-foot fall, was in an unconscious condition, with several bruises and lacerations about the head and shoulders, and bleeding from the right ear. During the course of the next four hours, the patient became delirious, but later again became quiet. The roentgen-ray examination by Dr. L. R. Sante disclosed a linear fracture of the skull in the left mastoid region extending across the petrous portion of the temporal bone and involving the base of the skull; there was no depression.

On the following day, the patient was more stuporous; the temperature rose to 101, and spinal fluid discharging from the ear was noticed to be cloudy.

The next day, June 29, the temperature was again elevated, there was some rigidity of the neck, and the culture taken from the discharging fluid was reported to be positive for streptococcus.

July 1, as the symptoms of meningitis were becoming more pronounced, it was decided to operate for the purpose of establishing spinal drainage. Accordingly, Dr. Rainey, with the patient under ether narcosis, did a laminectomy, removing the posterior arches of the second and third lumbar vertebrae. The dura was incised longitudinally for 3 cm., and crosswise for 1 cm. Cloudy fluid escaped in considerable amounts. A narrow strip of rubber dam was inserted just within the dural opening, and sutured in place with catgut. The muscles were closed in layers, and the wound was dressed with gauze. The duration of the operation was forty-five minutes. The patient was removed to the postoperative ward and placed in bed with the head elevated. During the night the dressing twice became saturated with fluid and had to be changed.

July 2, the patient slept quietly, and the maximum temperature was 103; fluid was still discharging freely from the wound, but there was no discharge from the ear.

July 4, the maximum temperature was 99.6, and the condition of the patient was considerably improved. During the following week, the temperature ran an irregular course, with a tendency to reduction. At the end of this period, the drain was removed.

July 18, the temperature and pulse had become normal, and there was no sign of meningitis, although mentally the patient was still somewhat confused.

July 30, on discharge from the hospital, the patient was in every respect normal, except that some mental confusion was still evident. An examination two months later was completely negative, and it was stated that the patient was taking part in play as freely as before the accident.

CASE 2.—A white man, aged 58, admitted to the St. Louis City Hospital, Sept. 24, 1922, had been accidentally shot in the right ear. The patient was conscious and rational; blood was issuing from the right external auditory meatus. There was complete paralysis in the muscular distribution of the right seventh nerve, and complete deafness in the right ear. The right knee jerk was slightly greater than the left.

September 25, the patient was in good condition, but the temperature rose to 101. The roentgen-ray examination, by Dr. L. R. Sante, disclosed that the bullet was located in the retropharyngeal tissues and perhaps in the petrous portion of the temporal bone, possibly slightly to the right of the midline. It was deemed best by Dr. Rainey not to attempt removal. The patient's condition remained unchanged during the next ten days.

October 5, the temperature rose to 102.2.

October 6, the patient was stuporous. Examination revealed slight indications of meningitis.

October 7, the temperature rose to 104, and there were positive signs of meningitis. Lumbar puncture produced turbid fluid under pressure and was found to contain 4,200 leukocytes, 98 per cent. of which were polymorphonuclears. Accordingly, under gas anesthesia, a trocar was introduced into the lumbar subarachnoid space, and a catheter was inserted through the trocar and held in place while the latter was removed.

October 8, the patient appeared much improved, although the temperature rose to 103.2. Drainage of the spinal fluid through the catheter was profuse. It was noticed that pus was issuing freely from the right ear.

For a week there was an irregular temperature with a tendency to decrease, and the spinal fluid continued to discharge but in constantly decreasing amounts.

Two days later, drainage had ceased altogether, and the patient appeared to be in a normal condition, except that there was still a discharge of pus from the ear.

This situation continued until November 11, when the patient had a chill, with nausea and vomiting, and the temperature rose to 102.4. Examination again revealed signs of meningitis, and the spinal fluid was found to be cloudy and to contain 8,000 cells, mostly polymorphonuclear leukocytes. A smear was reported as showing extracellular gram-negative diplococci.

November 15, the catheter was inserted as before, but in the interspace above that previously used.

November 16, the patient was stuporous and irrational, and the temperature was still elevated, but thereafter it gradually decreased for ten days, remaining normal afterward. The patient, however, continued to be somewhat irrational for several days longer.

Drainage continued but in decreasing amounts until November 21, when the catheter was removed and the patient was allowed to sit up in a chair. The discharge of pus from the ear was still present, but was much decreased in amount. The patient's condition continued to improve, and he was permitted to walk around the ward.

December 11, the temperature again rose, reaching 103.

December 13, an abscess was detected in the muscles of the right shoulder. The patient again became delirious but there were no signs of meningitis.

December 16, the abscess was incised, and 2 ounces of pus, which was found to contain streptococci, was evacuated.

December 18, the patient died, after developing definite signs of pneumonia. Postmortem examination revealed the bullet lodged at the right of the median line posterior to the sella and surrounded by a small amount of pus, which had a free tract for drainage into the external meatus. The arachnoid over the cerebral hemisphere was slightly thickened, but without evidence of an acute inflammation. Permission to examine the spinal cord was not obtained.

5. Kirchner, W. C. G.: Personal communication to the authors.
6. Leighton, W. E., and Pringle, J. A.: Recovery in Two Cases of Streptococcus Meningitis Following Lumbar Lamenectomy and Drainage, J. A. M. A. **64**: 2054 (June 19) 1915.
7. Hill, Roland: Surg., Gynec. & Obst. **33**: 288 (Sept.) 1921.
8. Babler, E. A.: Personal communication to the authors.

COMMENT

We feel convinced that continuous drainage is the correct principle for the treatment of septic meningitis. It seems unlikely that anything will be accomplished by following the principle now used in meningococcic meningitis, for the reason that septic organisms do not lend themselves to the preparation of specific antiserums, and the use of a nonspecific serum seems *a priori* to be without justification. Such successful results as have been reported can probably be correctly accounted for as largely the result of the drainage obtained by the lumbar puncture incident to the injection of the serum. Undoubtedly, mild cases of meningitis occur in which the patients recover spontaneously or under the influence of slight therapeutic efforts, such as the drainage obtained by lumbar puncture. During the war one of us (W. R. R.) observed such recoveries when repeated lumbar puncture was utilized for the purpose of reducing hernia cerebri. As regards irrigation of the arachnoid space between two openings, there is much to be said for its use.[9] It would not seem necessary, however, if free continuous drainage can be maintained; for it is well known that when the subdural cavity has an external opening, the rate of spinal fluid formation increases probably to several hundred cubic centimeters daily, and the fluid itself thus forms an ideally constituted and correctly flowing irrigation solution. Under such conditions, it is probable that the spinal fluid receives accretions by transudation from the cerebral veins, thus insuring lavage for the convex as well as for the ventricular surface of the brain.

So with the demonstration of the efficacy of catheter drainage, we have a method so simple and innocuous that there will be no hesitation in resorting to its use either in very early or suspicious cases, or in very late cases in which the patient is dangerously ill. One obstacle that remains to be overcome is the diminution of the flow of the spinal fluid, which invariably appears a day or two after the introduction of the tube. If results are to be attained in advanced cases or in cases of tuberculous meningitis, obviously the drainage must be quite free for a number of days. In the cases of which we know, this difficulty was surmounted, but only in part, by the daily use of aspiration with a large syringe. Evidently, adhesions quickly form and block the outlet. We have investigated this point on animals by the introduction of small pieces of rubber tissue beneath the dura. At the end of a week, the animals were killed and the surroundings of the drain examined. The rubber drains were enclosed in fine adhesions which completely occluded the dural opening. Apparently these adhesions had their origin chiefly from the fine, loose arachnoid membrane. With the dog, of course, there is not the drainage following operation that occurs in man. For one reason, the drain is introduced at the highest point of the cerebrospinal mechanism when the animal is standing, and for another reason, animals do not have the same free space beyond the cord that man has.

In our cases, daily aspiration by means of a large syringe generally withdrew a gelatinous plug from the drainage tube, which obstruction undoubtedly served to diminish the drainage. We have considered, as other means of opening the way, the introduction of a ureteral catheter through the drainage catheter in the hope that it will break up the fine adhesions which, as our experiments show, form about the drain, without at the same time injuring the roots or cord. Still another expedient would be the forcing into the drainage catheter of sterile saline solution.

There can be little doubt, from a theoretical standpoint, that the point of election for drainage is the lumbar region of the spinal column. At this point, the entire arachnoid space can be drained without any considerable stagnant pool suitable for the growth of organisms remaining. This situation obviously does not exist when the opening is situated anywhere in the cranial cavity.

An objection to drainage that has been mentioned to us is the danger of a superimposed infection arising from the drainage tube. This objection hardly deserves to be entertained, for we are mostly dealing with desperate cases in which the slight risk incident to manipulation is far outweighed by the added chances for recovery. It may be said, moreover, that in the presence of an infection, additional infection is less likely to occur or to assume serious proportions than with normal meninges, because barriers against infection have already been raised in the presence of the preexisting infection. Thus, in epidemic meningitis and in syphilitic conditions, such super-infection is rarely seen, although the manipulation incident to intraspinal therapy offers abundant opportunities for it to occur.

CONCLUSIONS

1. A survey of the literature indicates that recovery from septic meningitis rarely ensues, whatever the method of treatment.

2. The two cases described here, together with those previously reported, are sufficient to warrant giving continuous spinal drainage a fair trial as a method of therapy.

3. As contrasted with serum therapy, we believe, on theoretical grounds, that drainage offers the better prospect of success.

4. To be successful, drainage should be applied to the lumbar region, should be continuous for several days, and should be instituted early in the infection.

5. Since both laminectomy and the introduction of a trocar are simple and innocuous procedures, we recommend that in cases of septic meningitis continuous spinal drainage be given a trial.

9. Alford, L. B.: Irrigation of Subarachnoid Space, J. Nerv. & Ment. Dis. **48**: 359 (Nov.) 1918. (An experimental study of subarachnoid irrigation.)

Ventilation in Mines.—Many metal mines in the United States have unsatisfactory ventilation systems. The result is that employees frequently work under conditions which materially reduce efficiency. The Department of the Interior states that high temperatures and humidities, which unduly deplete the miners' vitality, prevent his working full time, and undermine his health. Workers at faces frequently breathe air impregnated with large quantities of fine mineral dusts. While siliceous dust is probably the most dangerous, dusts low in silica are also harmful. In some instances, the air in mines has been found to have a high content of carbon dioxide or even of carbon monoxide. Remedial measures suggested by the Bureau of Mines are the adoption of mechanical ventilating methods and the use of devices for reducing the dust, including the use of wet drills and the sprinkling of mine workings, and muck piles. Not a few metal mines throughout the country have adopted all or some of the bureau's recommendations for better ventilation and dust elimination. In one mining district where health and efficiency were especially poor, improvement of ventilation and the reductions of air dust caused a 50 per cent. reduction in insurance premium rates.

BARBITAL (VERONAL) INTOXICATION *

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Since its introduction in 1903, diethylbarbituric acid, or barbital, introduced under the proprietary name "veronal," has enjoyed the reputation of being an efficient and practically harmless hypnotic in proper dosage. Especially has it gained popularity in neuropsychiatric practice, partly because of its efficacy in inducing sleep in the various anxiety states, and partly on account of its usefulness in the management of other conditions in which there are disturbances in the emotional field. Its popularity soon reached the laity, and the latter began to use it extensively for insomnia and all other conditions to which laymen apply the term "nervousness." This promptly resulted in cases of intoxication due to excessive dosage.

In order to understand the signs and symptoms of barbital intoxication, it is opportune to review the physiology of the drug, and to discuss the pathologic findings in fatal poisoning cases. Animal experimentation, clinical observation and studies of postmortem material have established the fact that the chief action of the drug is on the walls of the small vessels and capillaries, causing their dilatation. This results in slowing the circulation, reducing oxidation, dissipating heat, and lowering the temperature. The slowing of the cerebral circulation and the reduction in the rate of oxygen and carbon dioxid exchange in the cerebral capillaries are responsible for the hypnotic effect of the drug. Baehem found that, by subcutaneous injection of sodium barbital, approximately 90 per cent. of the drug was recovered in the urine. When larger doses were injected subcutaneously, only from 45 to 50 per cent. of the drug was recovered in the urine, the remainder being retained in the other tissues of the body. Fischer and Hoppe recovered barbital from the urine within forty minutes after it was administered by mouth and within fifteen minutes after its subcutaneous injection. Roemer concluded from his experimental investigations in animals that barbital in general reduces the respiration, slows the circulation, and lowers the temperature, causing a general hyperemia of all the organs, and, in the terminal stages, twitchings of the general musculature. The postmortem examinations of fatal cases as a rule showed general hyperemia of all organs, cardiac dilatation, pulmonary edema, and frequently bronchopneumonia, degeneration of the convoluted tubules of the kidneys, and fatty degeneration of the liver. The brain, with the exception of hyperemia, showed nothing of significance. Barbital may be recovered from the brain, liver or other viscera.

Barbital poisoning may be either acute or chronic, the former resulting from a single large dose, such as from 40 to 50 grains (2.6 to 3.25 gm.), and the latter from repeated smaller doses. Special idiosyncrasies toward that drug may exist, in which condition it is quite possible to get toxic symptoms from the ordinary dose of 5 to 10 grains (0.3 to 0.65 gm.). Fortunately, however, such cases are rare. The amount of the drug ordinarily causing acute toxic symptoms is above 50 grains (3.25 gm.). The literature is full of reported cases in which from 50 to 125 grains (3.25 to 8 gm.) of the drug have been taken; and the vast majority of the patients have recovered. Our own patients admitted having taken amounts from 50 to 125 grains, and have made good recoveries. Recovery from more than 125 grains is not common.

In acute intoxication, the patient is usually comatose; the temperature may be subnormal, or moderately elevated; the pulse is either very slow or rapid; respiration may be lowered or increased. The face is flushed, the lips and finger tips are somewhat cyanosed, and the extremities are cold and clammy. The blood pressure is low. The urine in this state is diminished in quantity, of specific gravity somewhat higher than normal, and contains traces of albumin, and granular and epithelial casts. The drug may be recovered from the urine. The tongue is heavily coated and the breath is foul. The bowels are constipated. Usually there is incontinence of urine and feces. The corneal and abdominal reflexes may be absent. The knee jerks are diminished, and in severe cases are often absent. The pupils may not react to light. Spontaneous contraction and dilatation of the pupils are often encountered, and this phenomenon is regarded by some authorities as being pathogmonic of the condition. Ptosis and diplopia may be present. Amaurosis has been reported. Nystagmus is frequently encountered. The coma may last from twenty-four to seventy-two hours, and the patient may gradually regain consciousness. He then invariably will show ataxia, dyssynergia, a thick, drawling, indistinct speech, and he may complain of diplopia. Often a stage of delirium may supervene, and it is of the usual occupation delirium type. After consciousness is regained, the patient is irritable and at times ugly, making unusual demands from the nurses and physicians. Recovery may be complete in from two to three weeks. The danger signs in the acute period are the absent abdominal and knee reflexes, and bronchopneumonic conditions.

In cases of chronic intoxication, the patient presents a general cyanotic appearance, possibly with erythematous skin lesions. The gait is ataxic, and the station is unsteady, and there is a general dyssynergia. The speech is drawling and indistinct. Frequently there is omission of letters and syllables. The breath is foul, the tongue coated, and constipation persistent. The temperature is somewhat subnormal; the blood pressure is low, and the pulse slowed. The outline of the pupils may be normal, or may show inequality and irregularity. Reflex disturbances may be present. In chronic cases of barbital intoxication the mental attitude is irritable, the speech is somewhat incoherent and rambling, and perception is quite dulled. There is often a defect in attention, retention and association. Memory, especially for recent events, is poor. Emotional instability is common, and frequent outbursts of temper are encountered. The patients never have a clear insight into their own condition, and their judgment is faulty. They often complain of insomnia, and of general restlessness. They may become quite deluded, and may blame others for their failure of adaptation. They find excuses for unhappy states, but are never able to give sound logical reasons for their inability to meet situations adequately.

From the foregoing symptoms, it is quite obvious that unless there is a definite history of taking barbital, diagnosis of the conditions is not always easy. The lethargy, ptosis of the eyelids, extraocular muscle paresis, pupillary disturbances, absence of superficial

* From the Psychopathic Service of Bellevue Hospital.
* Read before the New York Neurological Society, April 3, 1923.

and of deep reflexes, and the relatively afebrile condition may stimulate epidemic encephalitis. The coma, scanty urination, with albumin and granular hyaline casts, the suffused facies, and the stertorous breathing may lead one into the error of diagnosing the condition as uremic coma. The ataxia, speech defect, pupillary disturbances and emotional instability may be mistaken for general paralysis. The literature is full of instances of barbital intoxication simulating these conditions. Even brain tumor and pneumonia have been considered diagnostic possibilities.

In studying the literature, it is evident that the personality of the patients intoxicated by barbital has been overlooked. Much attention has been given to the general somatic changes caused by this drug, and only scant reference is made to the personality types. The mental make-up of the persons taking barbital is referred to by few observers. My own experience would lead me to believe that the vast majority of patients suffering from acute veronal intoxication belong to the manic-depressive group, while the largest number of chronic barbital patients belong to the emotionally unstable type of constitutional psychopathic inferiority group. Acute intoxication usually results from taking a large dose of the drug while in a state of extreme depression, occasionally with suicidal intent. Chronic barbital addiction results from repeated taking of the drug by an emotionally unstable person, in his inability to face reality because of the painful effect it might entail. Barbital more or less deadens their sensorium, and gives them a rather spurious feeling of well-being, removing from them all sense of duty and responsibility. Such persons frequently are alcoholics, and it is quite common to find barbital addiction in alcoholics. Excessive smoking is also common in these patients. Most of the barbital patients ask for cigarettes as soon as they regain consciousness.

The following are a few of the cases of barbital poisoning that have come under my observation in the psychopathic wards at Bellevue Hospital:

REPORT OF CASES

Case 1.—A woman, aged 22, white, single, admitted Dec. 23, 1921, born in the West, had always been of an unstable make-up, and showed roaming tendencies. She taught physical training at school for a while, and later came to New York and became a dancer. Her partner on the stage was a man who was separated from his wife, and the patient became greatly attached to him. The patient had been worrying about the final outcome of their relationship; frequently she would lie awake nights. A friend gave her some barbital, and she used it every other night in order to get some sleep. On the evening preceding her admission to the hospital, the patient asked him to allow his wife to divorce him so that he might marry her. This he refused to do, and they quarreled. She left him, and the following morning she was found in a more or less stuporous condition. When aroused, she began to fight and scream at the top of her voice, in which condition she was brought to the psychopathic ward. She was well developed and well nourished. The heart and lungs were normal. The pulse was 70; respiration, 18; temperature, 99. There was a definite slurring to her speech. The pupils were equal, and widely dilated, but reacted very sluggishly. The eyegrounds were normal. The deep reflexes were normal in their responses. The abdominal reflexes were not elicited. The patient became quite stuporous and remained in a comatose state for three days. During this time she showed a definite nystagmus from side to side and a marked hippus. When she regained consciousness she became restless and irritable, and later became surly and ugly, insulting the nurses and physicians. Later she admitted that she had taken two vials of barbital tablets containing ten 5-grain tablets. Her condition gradually cleared, so that it was possible to allow her to go home on December 29.

Case 2.—A man, aged 31, single, admitted Feb. 4, 1922, in a state of coma, had always been a heavy cigaret smoker, and for the past six years had been a heavy drinker. He had taken 110 grains of barbital. On admission he was quite lethargic; he had a vacant expression; the wrists and finger tips were cyanosed; the temperature was subnormal. For three days it was impossible to arouse him. On the fourth day he became very restless; his speech was thick and unintelligible. His tongue was coated; the bowels were constipated. The pupils reacted very sluggishly. There was definite vertical and lateral nystagmus. The deep reflexes were definitely diminished. On the sixth day he was able to speak more clearly, although at times his speech was still unintelligible. He was quite depressed and at times would burst into tears. He was ataxic in his gait. The urine on admission contained a trace of albumin and had many granular and epithelial casts. His condition gradually improved so that it was possible to discharge him, February 24. February 28 he was readmitted, having been found in a drug store after taking 50 grains (3.25 gm.) of barbital. On admission he was very stupid, drowsy, had a drawling speech, and the gait was definitely ataxic. The pupils were sluggish to light and in accommodation. The tongue was definitely coated; the bowels were constipated. His condition gradually improved so that it was possible to discharge him, March 4. He was readmitted March 7, in a comatose state. It was impossible to elicit any corneal, abdominal or knee reflexes. The pupils showed constant spontaneous contraction and dilatation. He slept for about thirty-six hours, and then regained consciousness. His speech was quite thick and unintelligible. Later he said he had been drinking for about eighteen years. He had seen himself going to school drunk. He used to work at everything, but lost everything because of drink. He had been a painter, steamfitter, elevator hand and shop hand. He had been arrested for drunkenness and for fighting many times. He now took 100 grains of barbital. The first time he took 130 grains; next time, 50 grains. He said that barbital affected the head very little; that it was the feet that went under one. It made one feel that one did not care; it made one forget the past, and the future never entered in. It kept deadening worries all the time. It made one feel good. The patient gradually improved so that it was possible to discharge him, March 15. He was readmitted, April 7, in a very restless, boisterous, ataxic state, and admitted having taken 40 grains of barbital. His condition this time gradually improved, and he was discharged, April 10.

Case 3.—A man, aged 34, white, with a collegiate education, married, was admitted, Feb. 6, 1922, in a comatose condition. The respiration was rapid and shallow. The temperature was 102.8. The pulse was rapid (120). There were indefinite signs at the right base consisting of dulness and diminished breath sounds. There was a friction rub in the left axilla. The leukocyte count was 14,000, with 90 per cent. polymorphonuclears. The urine contained albumin and granular casts. The patient was comatose for two days, and on the fourth day he was able to talk. He admitted having taken 80 grains of barbital. On admission, the corneal and abdominal reflexes and knee jerks were absent. On the fourth day the reflexes returned. There was nystagmus in the lateral position, with sluggish pupillary reflexes. He was definitely ataxic. He then showed a definite hypomanic reaction. He was quite overactive and overtalkative. He was helpful in the ward; he was pleasant and agreeable. He then mentioned four former hospital admissions for similar conditions, having taken from 80 to 100 grains in different attacks. He mentioned a manic attack he had while in service in France. His condition gradually improved, and it was possible to discharge him, February 18.

Case 4.—A woman, aged 25, white, single, actress, admitted, April 10, 1922, stated that she was in the show business. Her mother died eight months before after a prolonged illness. The patient had worried a good deal over her mother's condition. She then contracted an infection of the throat, which was complicated by a peritonsillar abscess. This weakened her considerably; she could not sleep; she was restless

and irritable. Six months before admission, a friend told her to take heroin to lessen the sense of fatigue. The patient then took "one eighth of a bottle a day." One month before admission she decided to get away from the heroin habit and she therefore discontinued using the drug. This was followed by a feeling of nervousness and tension which were too powerful for her to control. To counteract these distressing symptoms, she was advised by a druggist to take barbital. She would consume about 25 to 30 grains (1.6 to 2 gm.) of the drug in order to get sleep. For two days preceding her admission she took about 200 grains (13 gm.) of barbital. She then became dazed and staggered, and claimed to have seen snakes and all sorts of animals. She denied drinking for the past six months. During her first few days of residence in the hospital she was very ataxic; she showed slurring, thick speech and sluggishly reacting pupils; she wet and soiled herself. Mentally, she was rather unstable, irritable and quick-tempered. She showed definite memory and retention defect. She had no insight. Her condition gradually improved until it was possible to discharge her, April 14.

CASE 5.—A woman, aged 37, white, separated, who was admitted, May 12, 1922, was confused and untidy; she wet and soiled herself. Her speech was drawling and indistinct. The pupils showed irregularity and sluggish reaction to light and in accommodation; nystagmus was present. Mentally she was quite restless, complaining, and scolded the nurses and physicians. She was surly and irritable. At the end of four days she became more amenable to care and treatment, but she still was somewhat emotionally unstable, and quite restless and sleepless. On the fifth day she became much quieter; she gained considerable poise, and said she was now feeling more like her former self. She admitted having taken large amounts of barbital. She was discharged, May 21. She was readmitted, May 23. She appeared very confused and ataxic. She was restless, untidy, excited, irritable, would not remain in bed, and had to be restrained. She wet and soiled herself. She showed sluggishly reacting, widely dilated pupils, sluggish knee jerks, and a peculiar cyanotic appearance of the lips and finger tips. Her condition gradually improved. She was rather evasive, and would only state that she had taken barbital in order to forget her troubles. June 6, she was visited by her oldest sister. As soon as her visitor left, the patient became somewhat depressed; sat on her bed with her hands supporting her head, and began to scream, "Keep them away; keep them away." She beat her chest with her fists, and tore her hair. When seen, the patient appeared in a state of hysterical excitement. We appealed to her sense of decency, stating that she had probably been suffering from painful home situations and that she was now resorting to a childish procedure in order to dispose of her pent up and repressed emotional energy. This appeal seemed to impress her, and she became quiet. While making the evening rounds about four hours after her hysterical outbreak, I asked her whether there was something we might be able to do for her, and if she wanted to speak about her difficulties. She willingly accepted this offer and gave the following information:

She had been raised in a very wealthy family, prominent socially and politically. She was the third of a family of four daughters. Her two oldest sisters were at home and were unmarried. Her younger sister of 24 was her favorite, and this sister was of a lively and open make-up and of nonconventional standards. Her older sisters were very conventional, and their only interests were those of the church and of gossiping about births and marriages that had occurred in the village where they were living. The patient married at 18 years of age. When she matured she found that she could not tolerate her husband, and they separated at the end of about three years of an unhappy married life. The patient described herself as being of a happy, vivacious nature, and had to be constantly on the go, but always admired men and had always sought their company. She admitted drinking. At the age of 26 she was introduced to a man twenty years her senior. The man was prominent socially, very wealthy and of refined, intellectual tastes and interests. They soon became intimate. In order not to attract any attention, she went to business. They lived together happily for nine years. Two years ago this man's wife learned of his relationship to the patient. They had to separate, as disclosure of their relationship would mean the ruination of the man's social status and disgrace to her own people, who were ignorant of her friendship with the man. Following their separation, the patient became depressed. At first she took to drink; then became restless, and some one told her to take barbital in order to get sleep. She found that the drug deadened her feelings and made her forget her troubles. On at least four different occasions she had consumed 100 grains at a time. She was in a private sanatorium for treatment. Following her discharge from the hospital, May 22, she returned to her parents' home. Her oldest sister made an unkind remark to her which hurt the patient a good deal. She then took 150 grains of barbital to forget her troubles. She stated that the cause of her hysterical outbreak was the fact that she had overheard a nurse in the ward telling her sister of the patient's condition and possibly told her of the patient's past life. This resulted in an hysterical outbreak. The patient apparently felt very much better after discussing her difficulties, and she was finally discharged from the hospital.

COMMENT

In the management of these cases, it is important that the drug be eliminated as rapidly as possible. High colonic irrigation, catheterization and warm packs have proved valuable. Cardiac stimulants and oxygen inhalation have been found very useful in the more serious cases. The patient must be kept warm. Pulmonary complications must be anticipated and energetically combated.

The restriction of the sale of the drug on physicians' prescriptions only, and the use of its proper chemical term, diethylbarbituric acid, would materially diminish the number of poisoning cases.

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Clinical Notes, Suggestions, and New Instruments

RUPTURED SPLEEN WITH REPAIR AND RECOVERY

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History.—V. E. R., a man, aged 19, white, a granolithic worker, seen, Dec. 3, 1922, who had had the usual diseases of childhood, and no operations, whose family history was negative, complained of pain in the abdomen, accompanied by nausea, and pain in the left shoulder.

The present illness began about 5:30 p. m., December 3, while the patient was engaged in a game of football. He received a butting blow in the abdomen, which caused him to feel faint, nauseated, and to complain of pain in the abdomen and left shoulder. He dropped out of the game, lay down for a while, and later, with assistance, walked home. On reaching home, he vomited, then, after resting for a short time, he went to his supper, but drank only a cup of tea, which was retained. As his condition did not improve, Dr. Doles was called. He found the patient markedly shocked and complaining of severe pain in the abdomen and left shoulder. The temperature was 97; the pulse, 118, and respiration, 26. Suspecting a rupture of some viscus, Dr. Doles had the patient removed to the hospital.

Examination.—The patient was a well nourished lad, 6 feet, 3 inches (190 cm.) in height, weighing 163 pounds (74 kg.). He appeared shocked, and complained of pain in the abdomen and left shoulder. Inspection of the chest showed a fixation of the lower left chest, particularly below the eighth rib. Palpation and percussion were negative. On deep inspiration, a few moist râles were heard at the angle of the left scapula. The apex of the heart was in the sixth left interspace, one-half inch external to the midclavicular line. No murmur was detected, but the muscular element showed lack of tone. The heart action was pounding, and gave the

impression of an idling heart. The pulse was 118; the blood pressure, systolic, 118; diastolic, 68. The abdomen was flat; no masses were seen or felt. There was a general fixation of the abdominal muscles with hyperesthesia.

There was no edema of the ankles and no ulcerations. The reflexes were apparently normal.

The urine was negative. No red count was made. There were 15,000 white blood cells; small lymphocytes, 10 per cent.; large mononuclears, 6 per cent., and polymorphonuclears, 84 per cent.

A diagnosis of ruptured spleen with intra-abdominal hemorrhage was made, and operation was advised, but declined.

The following morning, December 4, the patient's general condition appeared improved. The temperature was 98; pulse, 95, and respiration, 26. However, there was a marked discharge from the nose. The abdomen presented the same fixation of the abdominal muscles, with dulness in the left hypochondrium extending downward to the left iliac fossa. The percussion note in the right iliac fossa was also that of dulness. When the patient was turned on his left side, the dulness in the right fossa disappeared; when he was turned on his right side, the dulness in the left fossa persisted. At no time did I doubt the correctness of my diagnosis, and operation was again advised, but four times it was declined.

At 8 p. m., an enema was given. Shortly afterward I saw the patient and found that he had undoubtedly had a second hemorrhage. Operation was again urged, and this time consented to.

Operation.—The patient went to the operating room at 9 p. m. The temperature was 98; the pulse, 120, and respiration, 28. Blood count showed, red blood cells, 4,100,000; leukocytes, 15,000; polymorphonuclears, 78 per cent.; small lymphocytes, 14 per cent.; large mononuclears, 7 per cent; transitionals, 1 per cent., and hemoglobin, 78 per cent. Three hundred cubic centimeters of 25 per cent. glucose was given intravenously. Operation was begun at 10:10 p. m., under ether anesthesia. The wound was closed at 10:57 p. m.

The abdomen was rather well filled with blood. The spleen, when brought into view, showed a rupture of the lower pole along the margin with an eversion of the margins. There was also a rupture at a right angle in the center of the concave surface to within three-quarters inch of the hilum. The spleen presented the appearance of having been broken off by the blow of a stout stick. There was one fair size spurter in the field. This was encircled with a ligature on a small round needle. The other bleeders were comparatively unimportant. Having cleared the wound of clots, and having excised enough of the ragged herniated portion to approximate accurately the two surfaces, four deep chromic sutures were placed and tied, so as to bring the widely everted margins together without undue pressure. The margins of the capsule were carefully sutured with No. 0 chromic catgut. The rent on the concave surface was carefully repaired. There was no oozing. The free blood in the abdominal cavity that did not obstruct vision was left undisturbed. The wound was closed without drainage. At midnight, the patient's pulse was 116; respiration, 24, and blood pressure, 160 systolic, and 80 diastolic.

December 5, the patient vomited greenish fluid at intervals and suffered with gas pains. The temperature was 100; pulse, 110, and respiration, 24.

December 6, the patient was slightly nauseated, but more comfortable. Blood count showed: erythrocytes, 3,770,000; leukocytes, 15,600; polymorphonuclears, 87 per cent.; small lymphocytes, 5 per cent.; large lymphocytes, 2 per cent.; mononuclears, 2 per cent., and transitionals, 4 per cent.

December 7, the nausea was relieved. The patient complained of pain in the left shoulder, and expectorated dark phlegm.

December 8, there was a rise in temperature to 102; the pulse was 116, and respiration, 30. There was a good deal of coughing, which was productive of dark streaked sputum. Dulness was noticed on percussion of the lower chest. There was a leukocytosis of 17,200.

December 9, there was a cough productive of blood stained sputum. The temperature was 100.4; the pulse, 90, and respiration, 30.

December 10, the wound was dressed. One suture had broken, and some blood serum was draining from the site. The violent coughing doubtless was responsible for the broken suture. The temperature was 99; the pulse, 90, and respiration, 32.

December 11, expectoration continued, but the patient was more comfortable.

December 12, the sutures were removed and the wound was clean except at the site of the broken suture, previously referred to.

From December 12 to December 19, the condition of the patient continued about the same, but a physical examination of the chest showed fluid in the left pleural cavity. The chest was aspirated, and 20 c.c. of brown, clear fluid was removed.

December 23, Dr. C. L. Harrell and Dr. H. M. Doles were asked to see the patient. Their opinions were the same and their report was as follows: "Left front from the fourth rib down tactile, and vocal fremitus absent. Back midscapula down flat note over entire area. Impression: large quantity of fluid, which we think should be drawn off."

The chest was aspirated, and 125 c.c. of brownish yellow fluid was removed.

December 25, the patient's condition justified his discharge from the hospital with instructions to report to my office.

Jan. 12, 1923, the patient's chest was again aspirated. This time we obtained approximately 1,000 c.c. of fluid.

January 27, examination of the chest was negative, except for evidence of a thickened pleura. Since that time the boy has been seen several times. His condition is gradually improving, and he has resumed his former work.

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STRANGULATED FEMORAL HERNIA IN A WOMAN, AGED 107 YEARS

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This case is of interest solely because of the advanced age of the patient.

Mrs. D. F., a woman, aged 107, referred to me by Dr. Edgar Swift, Jordanville, N. Y., June 19, 1922, was suffering from a strangulated femoral hernia that could not be reduced.

The patient, born May 4, 1815, in the town of Stark, Herkimer County, N. Y., came from a healthy, long-lived race. Her father died at the age of 97; her mother, at the age of 76; a brother, at 95, and her husband at 80. Recently a nephew died at 87. She was married at the age of 19, and had borne six children, two of whom were living, one being over 83 years. She had always been well, a frugal eater, very calm and mild in disposition, contented and a great worker. The patient stated that until four years ago she had always cared for her garden, and made it a practice to plant every year a cabbage for each year of her age. She weighed about 100 pounds (45.4 kg.) and was 5 feet in height. She remembered events that happened when she was a child of 6 years, and took an interest in affairs of the present day. She read and sewed without glasses, and was quite deaf, owing to a grippal infection that occurred about three years before. She recently moved to the village of Jordanville, after living for eighty-nine years in one house.

When Dr. Swift suggested operating, the patient objected, saying, "I have had this complaint for over two score years, and it has always gone back before and why shouldn't it do the same now." She was given a little camphorated tincture of opium and the family was appraised of her condition. The physician was instructed to arrange for an operation at once, and I was called in to the case. It was decided not to remove the patient to a hospital, as it was late in the evening, the roads were rough and the distance was 12 or 13 miles. Miss Ada Rombough, assistant superintendent of the City Hospital at Little Falls, N. Y., accompanied me and assisted. We took along the necessary instruments and dressings. An operating room was arranged out of one of the living rooms, and an operating table improvised. Three large kerosene lamps set at a distance furnished fairly good light. The instruments were sterilized in a large pan, which was also

used for an instrument tray. When all was ready, Dr. Swift started the anesthetic (ether) with the patient in her bed. When she was partially under the anesthetic, she was carried to the operating room. While the anesthetic was being completed, the patient was prepared for the operation, which was done in the usual way. The femoral ring was closed by No. 1 chromicized catgut. The operation lasted about one-half hour, and the patient reacted from the anesthetic in a normal way.

On the following day, the patient got up and removed the dressings; on the third day, the physician found her out in another room sitting by the table eating her supper. The wound healed without any infection, and up to the present time it has not recurred.

ACUTE MASTOIDITIS WITHOUT AURAL DISCHARGE

CHARLES R. KING, M.D., TOLEDO, OHIO

This case is reported not as one of primary mastoiditis, but rather as an acute purulent mastoiditis having its origin in an acute purulent otitis media, and presenting some unusual features, the most interesting of which is the absence of aural discharge throughout the preoperative course of the disease.

It is difficult to picture in one's mind an acute suppuration within the middle ear, accompanied by suppurative mastoiditis with subperiosteal abscess, without a ruptured or incised drum head and aural discharge, and yet such cases do occur and have been reported.

REPORT OF CASE

C. B., a woman, aged 19, seen by me in consultation with her regular medical attendant, April 4, 1923, did not appear to be very ill, was ambulatory, and had been so from the beginning of her ailment, although she had been having a low, irregular elevation of temperature. Over the left mastoid process was a large, red, fluctuating swelling, which extended well upward under the scalp, and downward, but not quite to the tip. The auricle was slightly displaced forward. In other words, here was a typical subperiosteal abscess. The drum head was dull red; there was no light reflex present, and no bulging or perforation.

Examination of the right ear showed all landmarks present, with no disease apparent. The tonsils were twice the normal size and not active.

Five weeks prior to my examination, the patient had an acute bilateral tonsillitis, and two days later, earache in the left ear developed, continuing intermittently for three days. The tonsils then flared up again, and the earache returned in two or three days with greater severity, accompanied by pain in the left mastoid region. One week after the second onset of earache, she noticed some swelling over the left mastoid, and this, she says, varied in extent from day to day. During this time and until April 4, she suffered much earache, but there never was any aural discharge. She stated that at times she had a peculiar taste in her throat "as though it were blood or something."

A roentgenogram was taken at once, and it was reported that there was some cloudiness over the left mastoid with little or no cell destruction.

It was suggested to me that this might be a suppurative inflammation of one of the retro-auricular lymph nodes, but the history of the case and the clinical evidence seemed to justify the preoperative diagnosis of acute purulent mastoiditis, and the patient was sent to St. Vincent's Hospital for operation.

April 6, under ether anesthesia, by the regular mastoid incision, I opened up the affected part, which by this time was pointing in three or four places. The incision was followed by the immediate escape of about 4 ounces of yellowish green pus under pressure. The periosteum was retracted, and at first glance the mastoid cortex appeared normal. Closer inspection quickly revealed a small black spot of bone about 4 or 5 mm. behind the auditory canal. This spot was about 2 mm. in diameter, and was a cell full of necrotic tissue, which was curetted away; all adjacent cells were curetted free of granulation tissue with a small amount of thick pus. The antrum was found far posterior to the tympanum, and deeply situated. It was carefully cleared of necrotic tissue. The tip cells were thoroughly explored, but apparently the infection had been walled off before they could be successfully invaded. The mastoid wound was flushed out with a mixture of alcohol and hydrogen peroxid, an iodoform gauze drain inserted, and the wound closed in its upper half. The drum head was incised. The culture showed that the pneumococcus was the active infecting agent. The temperature, which on admission had been 101, dropped to normal the next day after operation and remained so.

On the fifth day, the middle ear was dry, and the wound looked healthy. The wound discharged moderately for two weeks, after which healing was very rapid, and the patient left the hospital, April 26. Healing was complete by May 14, and the patient was discharged with the advice to return in a few weeks for tonsillectomy, and this she has done.

COMMENT

The interesting feature of this case was that the patient complained of a peculiar taste in the throat and mouth for some time prior to operation. This symptom must have been associated with the variation in the size of the postauricular swelling, and was due to the escape of pus from the middle ear and eustachian tube. Following the operation, the patient insisted that she could taste alcohol in her throat, and this was not disputed.

The history indicates that the otitis media was secondary to acute tonsillitis; and the early serious involvement of the mastoid, and the peculiar course of the mastoiditis, show a clumsy effort on the part of Nature to rid the head of the infection before it could attack the brain or lateral sinus. This effort succeeded in establishing some drainage by way of the eustachian tube, and after the mastoid became involved, in localizing it to a certain extent, walling it off from the dura and sinus, and finding another point for drainage, or extension, rather, under the skin.

467 Spitzer Building.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

BUTESIN. — n-butyl-para-aminobenzoate. $C_6H_4NH_2.COO(C_4H_9)$.—The normal butyl ester of 4-aminobenzoic acid, $C_6H_4NH_2.COOH$.

Actions and Uses.—See General Article, Anesthetics, Local, Difficultly Soluble (New and Nonofficial Remedies, 1923, p. 41). The actions and uses of butesin are similar to those of benzocaine-N. N. R., but it is claimed to be more effective.

Dosage.—Butesin is used as a dusting powder, either pure or diluted. It may be used in the form of troches, ointment, suppositories or dissolved in a fatty oil. Its oil solutions may be sterilized by heat.

Manufactured by the Abbott Laboratories, Chicago. U. S. patent 1,440,652 (issued January 2, 1923; expires 1940). U. S. trademark applied for.

Butesin is a white, crystalline powder, odorless and tasteless. It is almost insoluble in water (about 1 in 7,000); soluble in dilute acids, alcohol, chloroform, ether and benzene; also soluble in fatty oils. Butesin is slowly hydrolysed when boiled with water. It melts at 55 to 57 C. and boils at 147 C. under 2 Mm. pressure. Butesin yields colorless solutions in alcohol and ether. The addition of silver nitrate solution to its alcoholic solution acidified with nitric acid produces no precipitate. A solution of butesin in diluted hydrochloric acid is not affected by saturation with hydrogen sulphide.

Add a few drops of sodium nitrite solution (1: 10) to 2 Cc. of a solution of butesin (1: 100) in very dilute hydrochloric acid and mix with 0.2 Gm. of betanaphthol in 10 Cc. of sodium hydroxide solution (10 per cent.). A scarlet red precipitate is given at once. To about 1 Cc. of a solution of butesin (1: 100) in very dilute hydrochloric acid, add a few drops of iodine solution, shake the mixture and allow to stand for 10 minutes with occasional agitation. A dark brown precipitate is formed which changes into large, reddish-brown prisms *(distinction from benzocaine which gives lustrous scales).*

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SATURDAY, NOVEMBER 3, 1923

THE PURIN COMPOUNDS IN THE BLOOD

In the human organism, uric acid represents the end-product of the metabolism of purin yielding compounds. The establishment of this fact itself was an important step in the development of physiologic chemistry, for it is only a few years since uric acid was still looked on as a derivative of protein. In the days of Liebig it was believed that, if the body had a rich supply of oxygen, nearly all the uric acid formed from the protein could be further oxidized, while, if the oxygen supply was deficient, uric acid was destroyed in much smaller proportion, and gout or some similar condition was likely to develop. The demonstration of the derivation of uric acid from purin precursors and the essential independence of purin metabolism from the disintegration of protein leading to urea has entirely altered the conceptions formerly held.

Uric acid occurs not only in the urine and in such unusual formations as tophi, but also in blood. The finding of uric acid in pathologic human blood dates back to the work of Garrod in 1848. With a truly outrageously inadequate method of analysis, Benedict [1] has said, this brilliant worker was able to obtain results of permanent value and to demonstrate for the first time that there is an accumulation of uric acid in the blood in gout and nephritis. But from the time of Garrod until the introduction of the Folin method, almost no progress was made, or even attempted, in this field of work.

Of late, thanks to useful microchemical methods, the study of uric acid in the blood has been pursued assiduously. Deviations from what may be regarded as a "normal" content can easily be ascertained. S. R. Benedict, in particular, has been responsible for the further demonstration that in various species uric acid exists chiefly in combination. The presence of considerable amounts bound to the pentose sugar ribose has been established [2] for beef blood, and the compound has also been found in human material. The problem of how the precursors of the excreted uric acid circulate is further complicated by the now established fact that purins other than the latter have been discovered in the blood. The latest study by Jackson [3] at the Boston City Hospital has revealed the presence of a nucleotid—a compound of adenin, pentose and phosphoric acid—in human blood in appreciable quantities. According to this investigator, while it seems certain that adenin nucleotid is by far the largest representative of this class in blood, it is not improbable that nucleotids of the other purins are also present in small amounts. The evidence at present available indicates that normal whole blood contains from 10 to 25 mg. of adenin nucleotid per hundred cubic centimeters. Perhaps the puzzling component of "undetermined nitrogen" so long recognized in the analysis of blood will presently be accounted for by the presence of comparatively simple purin complexes such as adenin nucleotid represents.

1. Benedict, S. R.: Uric Acid in Its Relations to Metabolism, Harvey Lectures **2**: 346, 1915-1916.
2. Davis, Alice R.; Newton, Eleanor B., and Benedict, S. R.: The Combined Uric Acid in Beef Blood, J. Biol. Chem. **54**: 595 (Nov.) 1922.
3. Jackson, H., Jr.: Studies in Nuclein Metabolism, I, Adenine Nucleotide in Human Blood, J. Biol. Chem. **57**: 121 (Aug.) 1923.

THE EFFECTS OF EXTREMES OF TEMPERATURE AND HUMIDITY

Man is associated with the atmosphere throughout his life. He breathes the air every minute of the day, and is more or less bathed by it. Accordingly, he has become adjusted to its chemical composition and physical properties under a variety of atmospheric conditions. Nevertheless, there are times when even to an organism so well adapted as is the animal body to its environment the air acquires properties that are commonly designated "bad." The explanations of what constitutes "badness" in the air have gradually undergone changes with the progress of scientific inquiry. It is not so long ago that malaria was ascribed to objectionable conditions of the atmosphere per se. Only a few years since, the occasional "badness" of inside air, as in crowded rooms or meeting places, was attributed to an accumulation of an organic poison exhaled from the lungs. Carbon dioxid, an eliminated product of respiration, has also been charged with responsibility for harmful contamination of the atmosphere by occurring in supposedly excessive amounts; but neither the hypothetic respiratory poison nor the ever present carbon dioxid has sustained its acquired reputation as the dangerous factor in bad air.

There are, of course, conditions in which a demontrable toxic component vitiates the atmosphere so far as its fitness for human respiration is concerned. Poisonous gases may escape in sufficient concentration to present a menace to man. An illustration of this was recently cited [4] with reference to the health hazard presented by the carbon monoxid contained in the exhaust gases of the modern automobile. The accidental escape of illuminating gas into closed rooms

4. The Health Hazard of the Automobile, editorial, J. A. M. A. **81**: 932 (Sept. 15) 1923.

sometimes furnishes another example. These are admittedly unusual contaminations of the atmosphere. It has been generally agreed in recent years that the "badness" of air in ordinary places is due to formerly unconsidered conditions; namely, improper temperature (which usually means a temperature too high), improper humidity, and lack of air movement.

The ventilation expert and the public both have been somewhat slow to adjust their standards and practices to the newer view. The studies of the New York State Commission on Ventilation indicate that overheated rooms are not only uncomfortable, but produce marked effects on the heat-regulating and circulatory systems of the body, and materially reduce the inclination of the occupants to do physical work. The most important effects of "bad air" are due to its high temperature, and the effects of even a slightly elevated room temperature, such as 75 F., are sufficiently clear and important to warrant careful precautions against overheating. The chemical changes in the breathed air of occupied rooms are of comparatively minor importance. Even with much higher temperatures, however, physiologic functions can proceed fairly satisfactorily, provided the relative humidity is not too high; for the elimination of surplus heat by evaporation from the body depends in considerable part on the content of water in the surrounding air. The New York commission found that the power to do either mental or physical work, measured by the quantity and quality of the product by subjects doing their utmost, is not at all diminished by a room temperature of 86 F. with 80 per cent. relative humidity. In the usual household environment there is, in fact, often a tendency for the indoor air to become unwholesome because of its excessive dryness; for this causes absorption of water from the body, especially from the mucous membranes.

When the humidity is sufficiently extreme to prevent the evaporation of perspiration on a hot day, depression of the body results. Movement of the air, by accelerating evaporation, tends to counteract this. There are situations, however, in which not merely one but all the environmental factors tend to be unduly unfavorable. This is true in the hot, deep metal mines. There the recent joint investigations of the Bureau of Mines and the Public Health Service [5] have shown that the untoward effects on man of almost saturated air with a temperature above 90 and below 98 F. are much less when the air is moving than when it is still. Further, the output of work that can be done is greater when the air is moving than when it is still, with this temperature and humidity. No beneficial effects were found by moving saturated air at 98.6 or 100 F., even at high velocities; and there was apparently some disadvantage. The limits of incompatibility with well-being are reached under such conditions.

5. Sayers, R. R., and Harrington, D.: Physiological Effects of High Temperatures and Humidities With and Without Air Movement, Pub. Health Rep. **38**: 1616 (July 20) 1923.

PARASITISM OF THE HEMOLYTIC STREPTOCOCCUS IN THE UPPER AIR PASSAGES

Certain types of pathogenic micro-organisms may have a widespread distribution in a community without giving evidence of their presence by any characteristic disease. Persons who have recovered from diphtheria, for example, may continue to carry the infectious agent of the disease even though they have acquired immunity. But there are also indications that persons may act as carriers for bacteria to which they have never been specially immunized, and which may, consequently, be a continual menace. Evidently there are times and conditions in which host and parasitic invader become adjusted to each other, so that there is neither an outbreak of disease nor a destruction of the parasite. Presently a change ensues whereby the infectious agent may die out or evidence of active infection may arise.

It is conceivable that an outbreak of harm under these circumstances may be due not only to a decreased resistance of the host but also to an enhancement of the virulence of the bacterial foe. Welch suggested long ago that the biologic adaptations may be more delicate and multiform than had been supposed. Just as the animal body may become more resistant to the offensive weapons of the invaders, so it is reasonable to assume that the bacterial body may also gradually develop increased resistance to the defensive mechanism of the host. In the latter event there would be the likelihood of an outbreak of disease.

The possibilities here at issue are presented by the irregular occurrence of epidemics of respiratory infections. It has been evident for some time that hemolytic streptococci associated with tonsillitis exist in a state of parasitism in the throats of seemingly healthy persons. The studies of Bloomfield and Felty [1] at the Johns Hopkins Hospital indicate that ordinarily the hemolytic streptococcus is strictly adapted to a local growth in foci of lymphadenoid tissue in the upper air passages, especially the tonsil. In such foci these bacteria may persist for long periods of time and in great numbers. They gain a lasting foothold there through some acute infection of the lymphadenoid tissue; but, in general, there is no evidence of a free growth on the mucous membranes when streptococcus disease is absent. Mere contact, even if close and prolonged, is not adequate to give rise to new carriers. It requires a radical change in the type of parasitism by which the micro-organisms are no longer confined to the local lymphadenoid foci like the tonsils before epidemic streptococcus disease occurs. The discovery of the precise causes of the modification of the normal habitat of the hemolytic streptococcus in the pharyngeal cavity is certain to mark an important step in advance.

1. Bloomfield, A. L., and Felty, A. R.: Definition of Hemolytic Streptococcus Parasitism in the Upper Air Passages of Healthy People, Arch. Int. Med. **32**: 386 (Sept.) 1923.

TRAUMATIC NEUROSES

Definitions of the term traumatic neurosis always contain the condition that organic lesions are absent. Nevertheless, ever since 1866, when Erichsen published his book "On Railway and Other Injuries of the Nervous System," opinion as to the nature of these disorders has been divided into two schools, emotional and commotional. Charcot and many others demonstrated that, in the great majority of cases at least, the symptoms are due to the mental attitude of the patient toward the whole situation in which he finds himself; the trauma is only the occasion or excuse for escaping from the situation, and the disorder is primarily emotional. The other school, in which Oppenheim was a prominent leader, maintains that, while many cases are emotional in origin, others, in spite of the absence of evidences of gross injury, must have some structural lesion, probably minute and as yet unrecognized. Great impetus was given to this controversy during the war. Mott, in England, examined the nervous tissues from men who had died instantly from, or soon after exposure to a shell explosion without evidence of gross bodily injury, and found multiple minute hemorrhages scattered through the nervous system, together with changes in the staining properties of the cells, especially of the Purkinje cells in the cerebellum. For a time this led to the suspicion that "shell shock" was a definite morbid entity. But the observation of cases with identical symptoms in persons who had not been subjected to the effects of high explosives or of trauma, together with the results obtained from clinical studies and from psychotherapy, gradually dispelled this view and led to the general acceptance of the emotional origin of the war neuroses. Oppenheim, however, still maintained his position, and evidence has gradually accumulated that certain post-traumatic syndromes, especially vasomotor and trophic disturbances, are persistent and quite intractable to psychotherapy.

Experimental and histologic studies have hitherto failed to discover any structural changes such as those hypothecated by Oppenheim. Schmaus, it is true, produced experimentally areas of progressive degeneration of the myelin sheaths in the spinal cords of animals by severe blows that produced no gross lesions. Such areas of "softening," however, could hardly occur in man without objective clinical signs that would at once exclude the case from the category of neuroses. Recently, Ingvar [1] has succeeded in producing minute physical alterations in nerve cells that, as he suggests, may have a direct bearing on this problem. By high-speed, prolonged centrifugation of the brains of animals immediately after removal from the body or while still within the recently decapitated head, the nucleolus is thrown to the distal end of the nucleus, the chromatophil substances are displaced distad, and the neurofibrils are loosened from the cell membrane and may collect in a mass in the center of the cell.

Ingvar suggests that the effects of centrifugal force resemble those of a blow applied suddenly when the head is free to move. The varying density of the different cell constituents results in variations in their relative displacement and thus causes severe damage to the cell. Apart from the great interest of these observations for studies of the living cell structure, a type of physical alteration is presented such as has been sought to explain the symptoms of commotion. In interpreting the observations for this purpose, however, it must be remembered that the centrifugal force used was steady, intense and prolonged. It may be questioned whether the sudden and momentary displacement from a blow to the head is comparable. Even should the comparability be granted, this will in no wise alter the interpretation that must continue to be placed on the vast majority of traumatic neuroses. It seems logical to conclude that none but the most severe head displacements could cause such physical distortions and that the clinical symptoms produced would ensue immediately on the receipt of the injury. The problem is of great social and medicolegal interest, and the greatest caution must be observed before accepting conclusions that would materially affect both prognosis and treatment.

1. Ingvar, Sven: Centrifugation of the Nervous System—A Method for Neurocytologic Study, Arch. Neurol. & Psychiat. **10**: 267 (Sept.) 1923.

Current Comment

KIDNEY FUNCTION IN THE ACUTE DISEASES OF CHILDHOOD

Information obtained from examination of the urine alone is no longer regarded as sufficient to establish the adequacy of the renal functions. The presence of albumin and casts in the urine does not necessarily indicate seriously impaired kidney function, nor is their absence a guarantee of a normally functioning kidney. As a recent writer [1] on the diagnosis of kidney defects has pointed out, inspection of the numerous data now available indicates that there is not always the expected parallelism between the anatomic and the functional conditions of this organ. Consequently, attention directed exclusively to one type of evidence may be quite misleading. This has lately been emphasized by the studies of Wilcox and Lyttle [2] at Bellevue Hospital on renal function in children. Serious impairment of their kidneys is supposed to be a rarity, for example, in the acute infections of early life. Tests undertaken during such disease have shown, however, that some retention of nitrogenous waste products may occur in many cases in which it was not suspected before the advent of modern diagnostic methods. Of the three substances determined, uric acid was above normal in a greater number of cases than were nonprotein nitrogen and creatinin. Wilcox and Lyttle regard these manifestations as simple impairment or depression of

1. Strauss, H.: Die Nephritiden, Berlin, 1920.
2. Wilcox, H. B., and Lyttle, J. D.: Kidney Function in Acute Disease, Am. J. Dis. Child. **26**: 195 (Sept.) 1923.

kidney function, though in some groups of cases the possibility of nephritis could not be ruled out. One is not justified in placing undue emphasis on such symptoms of acute infection. They do point, however, to the wisdom of more careful consideration of the kidneys in such conditions, and their routine protection from all unnecessary strain. By this, as Wilcox and Lyttle insist, in some cases prevention of impending kidney breakdown will thus be provided for; in others, treatment directed at the kidney will be instituted at an early rather than at a late date.

THE LANCET CENTENARY

On October 5, 1823, Thomas Wakley founded the London *Lancet;* as reported in our London letter, the periodical has just celebrated the completion of one hundred years of continuous publication. During the first ten years of its existence, the *Lancet* was a dueling ground for a series of encounters between its editors and certain members of the medical profession whom it was attacking. Wakley had constituted himself the defender of a group of practitioners who, he believed, were not being treated fairly. As a result, the *Lancet* was engaged in no less than ten legal actions during its first ten years, and six of these suits were for libel. Another feature of the *Lancet* was what purported to be verbatim reports of the lectures of many of the noted surgeons of the period. Here it became involved in disputes as to the ownership and right to profit by such material. The result of all these actions was that the *Lancet* was brought prominently to the attention of the public and the medical profession in a manner that inevitably assured it circulation and success. During its early years, the *Lancet* was instrumental also in guiding public opinion on a number of matters prominent before the public—such important problems as the Poor Law, the anatomy act, the adulteration and sophistication of food, and the conduct of the coroner's courts. It occurred to Thomas Wakley that he might accomplish still more in his field by a presentation of medical matters in parliament. Through the influence wielded by the *Lancet,* and with the aid of many friends in the lay press, he was able to make a successful campaign for a seat in the House of Commons. From that time, the *Lancet* had unusual powers as a medical publication. Wakley's journalism was individual and vital. Not only did he take advantage of well tried methods in lay journalism for improving his paper, but he was constantly developing new ideas for increasing interest and promoting circulation. When Thomas Wakley died, he was succeeded by his youngest son, James Wakley. Then came Thomas Henry Wakley, the founder's eldest son, and Thomas H. Wakley, Jr., his grandson. Until recently the *Lancet* has been continuously edited and owned by members of the Wakley family. The present editor is Sir Squire Sprigge, who assumed charge in 1908, and the company now owning the *Lancet* is the Hodder and Stoughton Company. The centennial of the *Lancet* is marked by a special issue of several hundred pages. Letters of congratulation came to it from great medical leaders throughout the world. In these congratulations the members of the American medical profession join heartily.

DUODENAL FUNCTION

The long debated assumption that the duodenum is an organ essential to life has been discussed editorially in THE JOURNAL. Some physiologists have asserted that the upper portion of the small intestine is as necessary for the organism as are the suprarenals or the parathyroids. Clinicians have been sufficiently impressed to attribute certain disorders in their patients to some disturbance in duodenal function. Bloodgood,[1] for example, has used the expression "physiologic death" in reference to the outcome of certain cases of duodenal dilatation assumed to be due to some disturbance of a hormone-producing function of the duodenum. Within the last few years it has been demonstrated in several American laboratories that animals can survive complete extirpation of this portion of the bowel.[2] The evidence gives no indication that the duodenal juice ordinarily contains any substance necessary for the functioning of the intestine lower down. Further evidence, if required, could be found in the latest report by Mann and Kawamura.[3] They removed the duodenum and maintained continuity of the gastro-intestinal tract by an end-to-end anastomosis of the jejunum to the stomach. The first portion of the jejunum thus assumed the position normally occupied by the duodenum. The common bile duct and pancreatic ducts were transplanted into this transposed portion of the jejunum at approximately the same distance from the pylorus and from each other as that at which they occurred normally. The animal remained in perfect health and maintained its normal weight for four years following removal of the duodenum, and there is no reason to believe that the duodenectomy would ever have affected the health of the animal, had it been allowed to live longer. The experiment therefore definitely proves, as Mann and Kawamura state, that in the dog the duodenum is not essential to life or health, and that whatever function it may have can be compensated for by the remainder of the intestinal tract. It is also shown that the transplantation of the bile and pancreatic ducts can be carried out successfully, so that the respective glands will remain virtually normal for a long time.

1. Bloodgood, J. C.: Dilatation of the Duodenum in Relation to Surgery of the Stomach and Colon, J. A. M. A. **59**: 117 (July 13) 1912.
2. Dragstedt, L. R.; Dragstedt, C. A.; McClintock, J. T., and Chase, C. S.: Extirpation of the Duodenum, Am. J. Physiol. **46**: 584 (Aug.) 1918. Grey, E. G.: Duodenectomy — Its Effect upon the Life of an Animal, Transplantation of the Pancreatic Duct, Surg., Gynec. & Obst. **28**: 36 (Jan.) 1919. Mann, F. C., and Kawamura, K.: An Experimental Study of the Effects of Duodenectomy, J. A. M. A. **73**: 878 (Sept. 20) 1919; Duodenectomy (An Experimental Study), Ann. Surg. **75**: 208 (Feb.) 1922. Moorhead, J. J., and Landes, H. E.: Duodenectomy: A New Method, J. A. M. A. **72**: 1127 (April 19) 1919.
3. Mann, F. C., and Kawamura, K.: Duodenectomy: Report of Experiment Four Years After Operation, J. Lab. & Clin. Med. **8**: 523 (May) 1923.

Undernutrition Manifestation of Tuberculosis.—It is not unlikely that some types of undernutrition are, instead of being a "pretuberculous" state, really minor manifestations of tuberculosis, and perhaps the only evidences of it. More comprehensive and searching studies may disclose this definitely, as clinical observation has long suggested it.—A. K. Krause: Rest and Other Things, p. 55.

Association News

THE JUDICIAL COUNCIL

Franklin W. Cregor, M.D., Indianapolis, has been appointed by President Wilbur to fill the vacancy on the Judical Council of the American Medical Association created by the election of Dr. J. H. J. Upham of Ohio to membership on the Board of Trustees. Dr. Cregor is now associate professor of dermatology in the Indiana University School of Medicine and is engaged in private practice in Indianapolis. He has long been an active member of the Indiana State Medical Association, and has served that society in various important assignments.

MEETING OF THE COUNCIL ON SCIENTIFIC ASSEMBLY

The regular semiannual meeting of the Council on Scientific Assembly will be held in Chicago, Dec. 21, 1923. Dr. J. Shelton Horsley, Richmond, Va., is chairman of this Council.

CONFERENCE OF SECTION SECRETARIES WITH THE COUNCIL ON SCIENTIFIC ASSEMBLY

The regular annual conference of the secretaries of the sections of the Scientific Assembly with the Council has been called for Dec. 22, 1923. The conference will be held at the headquarters of the American Medical Association in Chicago.

SUBSCRIPTION TO JOURNAL REDUCED

Attention is again called to the fact that the Board of Trustees of the American Medical Association has authorized the reduction of the annual Fellowship dues and subscription to THE JOURNAL to five dollars per annum, to take effect, January first, 1924.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Hospital Opened.—St. Luke's-on-the-Desert Hospital, Tucson, has been opened. Its capacity is twenty-five beds.

CALIFORNIA

Quack Fined.—The Board of Medical Examiners of the State of California report that Jack F. King, Los Angeles, was fined $500, October 13, on the charge of practicing medicine without a license. King paid the fine.

Physician Sentenced.—According to reports, Dr. J. E. Jolley, Los Angeles, was sentenced to one year in the county jail, October 20, when he pleaded guilty before Judge Crawford to violation of the Harrison Narcotic Law.

State Board of Medical Examiners.—The state board of medical examiners reelected officers, October 17, as follows: president, Dr. Percy T. Phillips, Santa Cruz; vice president, Dr. Harry V. Brown, Glendale, and secretary-treasurer, Dr. Charles B. Pinkham, San Francisco. Governor Richardson, Sacramento, has appointed Dr. Junius Harris, Sacramento, a member of the board.

Personal.—Dr. David Starr Jordan, chancellor emeritus of Stanford University, San Francisco, has been elected president of the Pacific Division of the American Association for the Advancement of Science.——Dr. Charles H. Halliday, Oakland, formerly in the employ of the French and Polish governments as a public health worker, has been appointed epidemiologist of the state board of health with headquarters at Berkeley.——Dr. Eugene H. Barbera has been appointed city physician of Oakland, to succeed Dr. John T. Kergan, who resigned.——Dr. William H. Eaton, Los Angeles, has been appointed city health officer of Santa Barbara to succeed Dr. Alva M. DeVilbiss who resigned.

GEORGIA

Tuberculosis Association Elects.—At the annual meeting of the Georgia Tuberculosis Association in Atlanta, October 11, Dr. Edwin W. Glidden, Alto, was elected president, and Dr. Thomas D. Walker, Jr., Macon, vice president.

IDAHO

General Hospital to Close.—The Idaho Falls General Hospital, conducted by Drs. Clifford M. Cline and Arthur R. Soderquist, will soon be discontinued, owing to the opening of the Latter Day Saint's Hospital in Idaho Falls.

ILLINOIS

Cook County Health Association.—At a meeting of county officials October 12, tentative plans were made for the organization of the Cook County Health Association, which will be effected at a meeting early in November. The association will cooperate with township officials and the state board of health. William F. Propper, supervisor of Thornton, was elected president of the organization.

Society News.—The Aesculapian Medical Society of the Wabash Valley composed of physicians of the cities of eastern Illinois and western Indiana held its annual business meeting in Paris, October 18. Dr. R. Malacher Combs, Terre Haute, Ind., was elected president of the society, and Dr. Herbert N. Rafferty, Robinson, secretary treasurer. The next meeting will be held at Danville in June.

State Medical Field Staff for Instruction of Health Officers.—District health superintendents of the state department of public health have been assigned to the task of personally instructing all local health officers in the proper discharge of their duties wherever indications point to this necessity. Local health officers who have assumed duty since January 1 are included in the list for personal conferences. It is felt that this is the most practical method for stimulating cooperation between state and local officials in public health service.

Chicago

Survey of Undernourished Children.—Drs. Martin M. Ritter, George C. Amerson and Emmett Keating were appointed a committee of three to study the care of undernourished children in the public schools, at a meeting of the Physician's Fellowship Club, October 19.

Portrait of Dr. Angell for Chicago.—The University of Chicago has received a portrait of president James Rowland Angell, of Yale University, New Haven, Conn., who was for twenty-five years professor of psychology at the University of Chicago and for nine years dean of the faculties.

Chicago Fakers.—It is reported that following the recent exposure of a St. Louis diploma mill, subpenas duces tecum were issued by the state's attorney, Chicago, for Peter J. Kopczynski, a chiropractor, Anne Hershey Abell, an osteopath, and P. C. Hughes, an insurance agent who are said to be implicated.

Society News.—The Chicago Medical Society gave a dinner in honor of Dr. Fred H. Albee, New York, at the Hamilton Club, October 31. Dr. Albee read a paper on "Industrial Surgery" before the society.——Dr. Russell M. Carman, Rochester, Minn., will read a paper on "Diaphragmatic Hernia" before the Chicago Roentgen Society, November 9.

Prof. Arthur Biedl to Give Dodson Lecture.—The second John M. Dodson lecture of the Alumni Association of Rush Medical College will be delivered by Prof. Arthur Biedl, University of Prague, in the amphitheater, Rush Medical College, on Friday, November 23, at 4:30 p. m. The subject will be "The Nervous and Endocrine Control of the Functions of the Alimentary Tract." The address is open to all physicians. On November 21, Professor Biedl will speak before the Chicago Medical Society and on November 26 before the Society of Internal Medicine.

Milk Regulations.—The Chicago Department of Health recently issued an order requiring that milk sold to the public on and after Nov. 15, 1923, by lunch rooms, restaurants, cafés and other eating places be served in the original containers, bottles, or receptacles of a similar character instead of by the glass as heretofore. A city ordinance has for some time

required that milk sold must contain not more than 88 per cent. of watery fluids, not less than 12 per cent. of total solids, or less than 3 per cent. of butter fat, and that pasteurized and skim milk shall not contain more than 50,000 bacteria per cubic centimeter from October 1 to May 1, and not more than 100,000 bacteria per cubic centimeter from May 2 to September 30. In a survey made during the last summer, 914 samples of milk were examined, and of these 451, approximately 50 per cent., were found below grade. The regulation requiring milk served in individual containers is intended to protect the public against substandard milk, and was promulgated after a thorough study of practices which obtain in Chicago and twelve other large cities.

INDIANA

Health Conference.—The eighth conference of the Indiana Society for Mental Hygiene will be held in Indianapolis, December 12. The meeting will be primarily for teachers, social workers, physicians, nurses and public officials. Prof. C. Macfie Campbell, Boston, will deliver an address.

Hospital Construction.—The contract has been awarded for the erection of the new tuberculosis sanatorium at Anderson. ——Construction work has been started on the $400,000 addition to Epworth Hospital, South Bend.——Two residences have recently been purchased by the Methodist Episcopal Hospital, Indianapolis, which will be remodeled for use as nurses' homes.——Wayne County Council has been asked to appropriate $50,000 to make improvements at the county tuberculosis hospital, Richmond. The gift of the 200-acre farm for the hospital was donated two years ago by Mrs. David Esteb.

IOWA

Anticancer Drive.—October 15-November 15 was set aside by the American Society for the Control of Cancer for a regional anticampaign (THE JOURNAL, August 25, p. 669) in the state of Iowa. Dr. William Jepson, Sioux City, chairman for the north Mississippi Valley is cooperating with the state medical society and the state tuberculosis association.

Hospital Construction.—Construction work will soon be started on the $100,000 addition to Mercy Hospital, Fort Dodge. This will double the capacity of the institution. The plans include a sun parlor the full length of the south side of both the new and the old buildings on each floor and a roof garden. New scientific equipment will also be installed.

KANSAS

New Hospital for Topeka.—The Security Benefit Association will erect a hospital at Topeka at an estimated cost of $200,000. Schmidt, Garden and Martin, Chicago, are the architects.

Chemistry Professor Honored.—The University of Kansas, the Kansas Academy of Science and the Kansas City section of the American Chemical Society gave an anniversary celebration, September 21, in honor of Edgar H. Summerfield Bailey, Ph.D., professor of chemistry, University of Kansas, in honor of the completion of his fortieth year of service at the university. Edward C. Franklin, Ph.D., president of the American Chemical Society, and Dr. Elmer V. McCollum, professor of biochemistry at Johns Hopkins University Medical School, Baltimore, former students of Professor Bailey, gave addresses.

LOUISIANA

Hospital School for Children.—In the Milliken Building at the Charity Hospital, New Orleans, a school has been established for the child patients. It is sponsored by the Orleans Parish School officials and the Parents' and Teachers' Council, and was started to help school children keep up with their studies while unable to attend regular school because of illness.

Government to Pay for Escaped Lepers.—Surgeon General Cummings announced, October 15, that the U. S. Public Health Service will pay for the care of lepers temporarily placed at Quarantine Station, New Orleans. This settles the controversy which has been going on for several weeks between the city, state and federal health authorities over the responsibility for the care of lepers who escape from the federal leprosarium at Carville and go to New Orleans (THE JOURNAL, September 29, p. 1119). Dr. John Callan, city health officer, was exonorated from all blame in the matter. Five lepers, two white and three colored, recently discovered in the city were immediately sent to Quarantine Station.

MAINE

Physician Aquitted.—Dr. Richard P. Black, Portland, who was recently indicted for the death of Mrs. Ilene York, alleged to have been caused by an illegal operation, was acquitted, October 6, after a three days' trial.

MARYLAND

Dean of Johns Hopkins Resigns.—Dr. J. Whitridge Williams, for the last thirteen years dean of the Johns Hopkins Medical School, has resigned in order to devote his entire time to the new women's clinic of the Johns Hopkins Hospital, of which he is director. Dr. Williams has been connected with the Johns Hopkins Hospital since 1889. In 1893 he became professor of obstetrics and in 1899, obstetrician-in-chief, which positions he still holds.

Personal.—Dr. James H. Mason Knox, Jr., Baltimore, director of the child hygiene bureau, state department of health, has been elected a member of the executive committee of the American Child Health Association.——Dr. Elizabeth Pissoort of Belgium has arrived at the Johns Hopkins Hospital to do graduate work in skin diseases. Dr. Pissoort has obtained one of the Hoover Exchange Scholarships offered by the Rockefeller Foundation.——Dr. John A. Evans addressed the Baltimore City Medical Society on "Osteitis Deformans" at a meeting held in Osler Hall, October 19.——Dr. Paul Preble, director of the new Administrative Health Practice Bureau now established at the School of Hygiene and Public Health, Johns Hopkins University, was the chief speaker at a public meeting of the Baltimore County Health Association, held at Pikesville, October 17.——Dr. Valcoulon L. Ellicott, first on an eligible list of five physicians, has been appointed epidemiologist to the Baltimore City Health Department. Dr. Ellicott is connected with the New York State Department of Health.

MASSACHUSETTS

Tufts Medical School.—Tufts College Medical School, Boston, opened its fall term with total registration of 515. A system of faculty advisers to students has been introduced. Among the changes on the faculty are the appointment of Dr. Martin J. English, assistant professor of pediatrics, and Dr. George Sykes, assistant professor of anatomy.

City Federation Offers Health Course.—Members of committees interested in public health work are invited to register for the free course given by the public health committee of the Boston City Federation in cooperation with the Boston Health League and sanctioned by the Suffolk County Medical Society. The course which began, October 31, will continue until December 5. Lectures, demonstrations, and visits to institutions make the course a comprehensive outline of all city health work.

Suspended Registrations.—At a meeting of the state board of registration in medicine, October 4, the certificate issued to Dr. Earl R. Devere, Millville, was suspended for one month on complaint of the son of a patient who died of cancer. The patient had been treated for six months at a cost of $475. The board construed the attitude and behavior of Dr. Devere as unprofessional conduct.——The certificate of Dr. Frederick N. McKenney, Boston, was suspended for one month for violation of the prohibition laws.

MICHIGAN

Smallpox Closes Schools.—Smallpox and scarlet fever have broken out in Eaton County. Schools and moving picture houses in Eaton Rapids have been closed owing to smallpox. Every home in the Follett School district, Bellevue, having children attending the school has been quarantined for ten days due to an outbreak of scarlet fever.

Hospital News.—Practitioners' clinics will be resumed at the University of Michigan Hospital, Ann Arbor, beginning November 14, and continuing every month until July, 1924.——A new building will be erected for the Christian Psychopathic Hospital, Grand Rapids, at a cost of about $25,000.——The new Pennock Hospital, Hastings, erected at a cost of $125,000 was recently opened. Funds for the building were donated by merchants of the city. This new concrete and brick structure has sixteen private rooms and four wards.

MISSOURI

Medical School Survey.—Dr. E. P. North, president of the state board of health announced, October 16, that a survey would be made of every medical school in the state to

determine whether any were granting certificates without the preparation required by law. This action was taken after the arrest of four Missouri physicians in connection with the issue of false diplomas (THE JOURNAL, October 27, p. 1448). Dr. Frederick C. Waite, Western Reserve University Medical School, Cleveland, has been requested to make the investigation.

MONTANA

Medical Examiner Appointed.—Dr. Howard W. Bateman, Choteau, has been appointed by Governor Dixon a member of the state board of medical examiners for a term ending, Sept. 26, 1930. Dr. Bateman has just completed the unexpired term of the late Dr. Patrick H. McCarthy of Butte.

NEW HAMPSHIRE

New England Society of Psychiatry.—The semiannual meeting of the New England Society of Psychiatry was held in Concord, October 3, the society being the guest of Dr. Charles H. Dolloff, superintendent of the Concord State Hospital. Dr. Douglas A. Thom, Boston, and Dr. Samuel Tartakoff, Taunton, Mass., gave addresses.

NEW JERSEY

Study of Workmen's Compensation.—The Governor has appointed Drs. Andrew Wallhauser, Newark, Martin Scamatolski, Bayonne, and George A. Hullett, Princeton University, members of a committee which will make a comprehensive study of workmen's compensation and prepare legislation which will carry out its recommendations.

NEW YORK

Hospital News.—Ground will be broken within a few weeks for a six story and basement structure for the Mary Immaculate Hospital at Jamaica, L. I. The new building will adjoin the present hospital.——A new county home and infirmary will be erected at Alden at an estimated cost of $1,500,000. Building is in charge of the county board of supervisors.

State Bond Issue for Hospitals.—Among proposed measures that will come before the voters of this state, November 6, is a $50,000,000 bond issue for state institutions, particularly those for the care of the insane. This money would not be immediately available, but would be distributed over a number of years. The press seems unanimous in supporting this measure. Dr. Sanger Brown of the New York State Commission for Mental Defectives estimates that there are at least 10,000 persons classified as mental defectives in this state, while existing institutions care for only about 6,382.

Personal.—Dr. Paul B. Brooks of Delmar, who has been connected with the state department of health since 1915, has been appointed deputy state health commissioner.——Dr. William L. Munson, Granville, district state health officer, has been appointed trustee of the Raybrook State Hospital for the Treatment of Incipient Pulmonary Tuberculosis.——Dr. Jonathan Pearson, Schenectady, recently examiner in the Raybrook Sanatorium, has been appointed acting director of the division of tuberculosis of the state department of health.——Dr. Robert E. Plunkett, Whitehall, has been appointed acting superintendent of tuberculosis clinics of the state department of health.——Drs. Frank B. Wheeler, Hudson, and Charles R. Skinner, Hudson, were elected president and secretary, respectively, of the Columbia County Medical Society, October 2.——Prof. A. Biedl of the University of Prague will deliver the Harrington lecture at the University of Buffalo, November 10.

New York City

State Laryngological Society.—The fiftieth anniversary of the New York Laryngological Society will take place November 15, at the New York Academy of Medicine. There will be an exhibition representing the important contributions made in laryngology in the City of New York.

Anniversary Discourse.—The anniversary discourse of the New York Academy of Medicine will be delivered, November 1, by Dr. William S. Thayer, Baltimore, his subject being "Studies on Acute Bacterial Endocarditis." The program was arranged in cooperation with the Association for the Prevention and Relief of Heart Disease. At this meeting a vote will be taken on the question of the fifty million bond issue for state institutions for the insane, which is to be submitted to the people, November 6.

First Four-Year Class to Celebrate.—The Class of 1898, College of Physicians and Surgeons, Columbia University, New York, will celebrate its twenty-fifth anniversary with a banquet, December 8. This was the first four-year class to be graduated from this college. The arrangement committee for the dinner includes Dr. Charlton Wallace, chairman, Drs. Herman Schwarz, Malcolm Goodridge, Samuel J. Kopetsky, Herman R. Graeser, Howard Fox, Franklin A. Dorman, Charles F. Hunt, John J. Collins and Burton J. Lee.

To Build Medical Center.—Convinced that nothing will be gained by waiting longer for reduction in the cost of labor and material, the administrative board of the College of Physicians and Surgeons and the Presbyterian Hospital, will start construction work on their new medical center before the end of this year. The project, comprising all land between Broadway and the Hudson River from One Hundred and Sixty-Fifth to One Hundred and Sixty-Eighth streets, presented by Edward S. and Mrs. Stephen V. Harkness to Columbia University and the Presbyterian Hospital, will cost approximately $15,000,000, according to the plans. The base for the medical center covers about 21 acres.

Personal.—Dr. Francis H. Humphris, London, England, a World War veteran and roentgenologist, was guest of honor at the Army and Navy Club, New York, October 11.——Dr. Martin J. Echeverria has been appointed physician-in-chief at the New York Dispensary to succeed the late Dr. Trumbull W. Cleaveland.——Dr. L. Emmett Holt, now in China, and Dr. Philip Van Ingen were named first vice president and secretary, respectively, of the American Child Health Association at the annual meeting in Detroit, October 15-17.——A testimonial dinner was tendered to Dr. William F. Honan, director of the department of surgery of the New York Homeopathic Medical College and Flower Hospital, at the Hotel Commodore, October 23, by 200 physicians.

City Tuberculosis Conference.—A conference was held by the New York Tuberculosis Association in cooperation with the city health department, the public welfare department, New York City, Bellevue and Allied Hospitals, the state department of health, the Association of Tuberculosis Clinics of Greater New York, the tuberculosis committee of the Brooklyn Bureau of Charities, the Milbank Memorial Fund, the National Tuberculosis Association and the Queensboro Tuberculosis Association, at the New York Academy of Medicine, October 25. Among the speakers were: Drs. David R. Lyman, superintendent, Gaylord Farm Sanatorium, Wallingford, Conn.; Samuel B. English, superintendent, New Jersey Sanatorium for Tuberculous Diseases, Glen Gardner, N. J.; Dr. Matthias Nicoll, Jr., state health commissioner, Albany; Dr. Lawrason Brown, Trudeau (N. Y.) Sanatorium; Oscar M. Schloss, professor of pediatrics, Cornell University Medical School, New York; Henry Kennon Dunham, professor of tuberculosis, Cincinnati Tuberculosis Sanatorium; Frank J. Monaghan, health commissioner of New York City, and Eugene L. Opie, professor of experimental pathology, University of Pennsylvania, Philadelphia.

Additions to Sanitary Code.—The report of the law division of the New York City Department of Health shows among others the following additions to the sanitary code in 1922:

1. The maintenance, operation, or conduct of a roentgen-ray laboratory without a permit issued by the board of health is prohibited.

2. The use of cigar cutters designed for common use is prohibited.

3. All physicians, nurses, midwives and other persons in attendance on confinement cases are required to instil in the eyes of new-born children a 1 per cent. solution of nitrate of silver, or an equally effective agent to prevent the development of ophthalmia neonatorum.

For the first time the department of health brought criminal actions against persons breaking quarantine, civil actions alone having been instituted previously. Penalties ranging from $100 to $250 were imposed, and warnings given that prison sentences would be given for future offenses. Several appeals were taken from decisions rendered by the courts and those by the board of health, but no reversals of judgment or opinion were obtained, and "the jurisdiction, power, and authority of the board of health remain unimpaired."

NORTH CAROLINA

Hospital News.—A new forty-two bed building under the management of the State Sanatorium for the Treatment of Tuberculosis, Raleigh, was opened, October 11. The new building, which is for negro patients, is similar to the building occupied by white patients and is situated about one mile from the main sanatorium. Dr. J. W. Walker, Asheville, is

physician-in-charge of the new institution.——The children's addition to the Rex Hospital, Raleigh, was formally opened, October 7. This ward, the gift of W. H. Williamson, Raleigh, as a memorial to his wife, adds thirty-five beds to the hospital.——The Guildford County Tuberculosis Sanatorium, Greensboro, is nearing completion. The sixty-bed building, with equipment and furniture cost $150,000. The Cone family donated $30,000 toward the equipment as a memorial to Caesar Cone.

OHIO

Medical Building Sold.—The sale of the Ohio State University Medical Science Building for $60,000 to the White Cross Hospital Association, Columbus, was announced, October 12, by the university board of trustees. All university equipment will be moved to the medical building now being constructed on the campus.

Society News.—At the annual meeting of the Academy of Medicine of Cleveland, recently, Dr. John B. Morgan was elected president, and H. Van Y. Caldwell, secretary.——Dr. John V. Hartman, Findlay, was elected president of the Northwestern Ohio Medical Association at the annual meeting in Findlay, October 9. Dr. Norris W. Gillette, Toledo, was elected secretary and Dr. John R. Johnson, Lima, treasurer.——At a meeting of the section of pathology and experimental medicine of the Toledo Academy of Medicine, November 9, a demonstration in the diagnosis and treatment of syphilis and gonococcus infection will be given with the aid of exhibits from the Annual Meeting of the American Medical Association at San Francisco.

OKLAHOMA

Personal.—Dr. Marion W. Buchanan, Watonga, has been appointed health officer of Blaine County to succeed Dr. William W. Gill, who is moving to Enid.——Dr. Joseph D. Warrick, Cashion, has been appointed resident physician at the State Institution for the Feebleminded, Enid.——Dr. George A. Waters, Pawnee, has been appointed county health officer to succeed Dr. Felix T. Gastineau who resigned to join the staff of the Eastern Oklahoma Hospital for the Insane at Vinita.

PENNSYLVANIA

Hospital News.—The new Muncy Valley Hospital, Muncy, opened its doors for the inspection of the public, September 19.——Commissioners of Delaware County have purchased the Isaac Scott homestead in Concord Township for a tuberculosis hospital. The property consists of 97 acres, a twenty room house and other buildings. The commissioners plan to remodel the house and build later.——At the seventy-fifth anniversary of Mercy Hospital, Pittsburgh, September 24, Dr. Alfred Stengel, Philadelphia, gave a medical clinic and Dr. John J. Buchanan delivered the X. O. Werder Memorial address.

Philadelphia

Public Health Lectures.—A series of ten free lectures on public health problems will be given under the auspices of the School of Hygiene and Public Health in the lecture room of the Laboratory of Hygiene, Saturday mornings, beginning November 3.

Personal.—Dr. Edward E. Montgomery, emeritus professor of gynecology of the Jefferson Medical College, who sails for South America, November 10, will be guest of honor at a dinner given by the Ohio Society at the Adelphia Hotel, November 2.

Second Course of Insulin Instruction.—On account of the large number of applications for the first course open to physicians to study the use of insulin in the treatment of diabetes at the University of Pennsylvania, it was found necessary to give a second course, which will start November 5, and be given as the previous course, Monday, Tuesday, Thursday and Friday from 2 to 5.

Italians Found Scholarship.—A $5,000 scholarship has been established by the Italian residents of Philadelphia at the Women's Medical College of Pennsylvania, Philadelphia, for the benefit of one of their nationality. Miss Helen M. Angelucci, Philadelphia, was chosen the first to enter for the study of medicine under the scholarship, which was named in honor of Mrs. Benjamin Miller of Germantown.

Health Drive in Factories.—The Philadelphia Health Council and Tuberculosis Committee have started a campaign to conduct free examinations and to secure medical assistance in factories of the city, it was announced, October 13. Physical examinations in plants which do not own their own clinics will be started at once on a wholesale scale financed by the Christmas Tuberculosis Seal Funds. Dr. Mervyn R. Taylor, in charge of the examination of men, Dr. Marnetta E. Vogt, in charge of women, and two nurses, are employed by the health council for industrial work.

RHODE ISLAND

New Laboratory Opened.—On the occasion of the dedication of the Hesse Laboratory of Chemistry at Brown University, Providence, October 10, the degree of doctor of science was conferred on Prof. James W. McBain of the University of Bristol, England, and the degree of doctor of laws was conferred on President James R. Angell of Yale University, New Haven, Conn. Secretary of State Charles E. Hughes made the chief address at the banquet.

SOUTH DAKOTA

Annual Medical Clinic.—Mitchell physicians and surgeons will hold their third annual clinic, November 6-7, at the same time as the annual meeting of the Mitchell District Medical Association. There will be medical and surgical clinics at St. Joseph's Hospital and the Methodist State Hospital.

TEXAS

Southern Texas Surgical Society.—At the fifty-fourth annual meeting of the South Texas Surgical Society in Houston, October 10-12, Dr. George H. Lee, Galveston, was elected president; Dr. C. O. Bryan, Center, vice president, and Dr. Willard R. Cooke, Galveston, secretary-treasurer, Dr. Samuel M. D. Clark, New Orleans, and Dr. Curtice Rosser, Dallas, read papers.

VERMONT

State Society Election.—At the one hundred and tenth annual meeting of the Vermont State Medical Society at Bennington, October 11-12, held under the presidency of Dr. John A. Stevenson, Chester, the following officers were elected for the ensuing year: president, Dr. Frank E. Farmer, St. Johnsbury; vice president, Dr. Eugene A. Stanley, Waterbury; treasurer, Dr. David Marvin, Essex Junction (reelected), and secretary, Dr. William G. Ricker, St. Johnsbury (reelected). The next meeting will be held at Burlington, Oct. 9-10, 1924.

WISCONSIN

Personal.—Dr. Roland S. Cron, Milwaukee, has been added to the University Extension Division for graduate medical instruction. Dr. Cron was formerly assistant professor of obstetrics and gynecology at the University of Michigan Medical School, Ann Arbor, Mich.——Drs. Alexander B. Magnus, neuropsychiatrist, Boston, Mass.; Bertha T. Haessler, pediatrician, Chicago, and Sadie Myers Shellow, Ph.D., psychologist, Smith College, Northampton, Mass., have been added to the staff of the Milwaukee County Dispensary.——A banquet was tendered to Dr. and Mrs. Filip Forsbeck, Milwaukee, in honor of their silver wedding anniversary, September 19.——Dr. Hans Finsterer, Vienna, conducted clinics in Milwaukee, October 16, at St. Mary's Hospital and at Marquette University Medical School. A banquet was given Dr. Finsterer October 18; 200 physicians were present.

PHILIPPINE ISLANDS

Hospital News.—Bacolod is one of the first towns in the Philippine Islands to open a hospital exclusively for children. Money for the institution was obtained by popular subscription. Dr. Vicente Locsin is in charge of the institution.——Through the efforts of Prof. Jose Albert, acting dean and chief of clinics at the University of the Philippines College of Medicine and Surgery, Manila, lectures on special medical topics are being periodically delivered before the resident and intern staff of the Philippine General Hospital by members of the faculty of the university and other physicians.

CANADA

Public Health News.—At a recent meeting of the board of health of Simcoe, Ont., it was decided to close all the schools in the vicinity on account of the prevalence of scarlet fever.——A free medical clinic for veterans of the World War and their families has been established in Toronto by the Western Toronto Veterans' Association. Clinics will be held once a

week, and will be in charge of Drs. Sterling L. Spicer, William S. Aitchison and John A. Tuck.

Personal.—Dr. John Ronald Currie, professor of preventive medicine, Queens University Faculty of Medicine, Kingston, Ont., has been appointed Henry Mechan professor of public health at the University of Glasgow, Scotland.——Dr. Charles C. J. O. Hastings, medical officer of health, Toronto, Ont., was awarded the degree of doctor of science at a special convocation at the University of Syracuse (N. Y.), recently. ——Dr. William Edward Gallie, Toronto, has been appointed Hunterian professor and lecturer at the Royal College of Surgeons, London, England, for April, 1924; his subject will be "Living Sutures."——Dr. John F. Argue, Ottawa, president of the Ontario Medical Association, gave an address at the recent meeting of District 3 of the Ontario Medical Association in Owen Sound.——Dr. John G. MacDougall, Halifax, N. S., a vice president of the Canadian Medical Association, delivered an address before the Clinical Congress of Surgeons, in Chicago, October 21.

Social Hygiene Report.—A report of the medical committee of the Canadian Social Hygiene Council on the standardization of the diagnosis and treatment of venereal disease has just been published by the department of public health at Ottawa. The report represents the work of a committee of thirty-five prominent physicians, with Dr. Edmund E. King, Toronto, chairman. A copy will be sent to every practicing physician in the country. The report covers: medical research and laboratory questions, with subsections on the licensing of men doing Wassermann tests and the standardization of the Wassermann test; diagnostic tests to demonstrate *Spirochaeta pallida;* significance of the Wassermann reaction; negative Wassermann reaction; Wassermann tests as evidence of cure in the treatment of syphilis; relative value of arsenicals and nonarsenicals; eligibility for marriage; minimum requirements of treatment; treatment of syphilis; hereditary syphilis; early preventive treatment; gonorrhea, treatment, and complications and standard of cure; urethroscopy, blood examination; gonorrhea in the adult female and in children with subsections on treatment, and complications, and other phases of venereal disease. This report will be followed by another one on the same subject, prepared especially for use in all training schools for nurses throughout Canada.

GENERAL

American College of Surgeons' Election.—Dr. Charles H. Mayo, Rochester, Minn., was elected president of the American College of Surgeons at the annual meeting in Chicago, October 25; Dr. Ernest A. Sommer, Portland, Ore., first vice president; Dr. Frederick N. G. Starr, Toronto, Canada, second vice president, and Dr. Charles E. Kahlke, Chicago, treasurer.

Directory of Neurologists and Psychiatrists.—The National Committee for Mental Hygiene is compiling a directory of all physicians in the United States who are practicing neurology or psychiatry, with autobiographic information concerning each, as far as possible. This information is designed to meet the demand for the service of neuropsychiatrists in different communities.

National Anesthesia Research Society.—At the annual meeting of the Society in Chicago, October 22-24, the following officers were elected for the ensuing year: president, W. I. Jones, D.D.S., Columbus, Ohio; vice presidents, Drs. John H. Evans, Buffalo, and Arthur E. Guedel, Indianapolis, and secretary-treasurer, Dr. Frank H. McMechan, Avon Lake, Ohio (reelected).

Industrial Physicians Elect.—At the eighth annual meeting of the American Association of Industrial Physicians and Surgeons in Buffalo, October 1-3, the following officers were elected: president, Dr. Loyal A. Shoudy, Bethlehem, Pa.; vice presidents, Drs. Donald B. Lowe, Akron, Ohio, and William Alfred Sawyer, Rochester, N. Y., and secretary-treasurer, Dr. Arthur G. Cranch, Cleveland. Dr. George M. Price read a paper on "Physical Examination of 50,000 Garment Workers."

Directory of City Health Officers.—A directory of city health officers in cities of the United States having a population of 10,000 or more is published in the U. S. *Public Health Reports* of Oct. 19, 1923. The name, city, state and official titles are given with information as to which are "whole-time officers." For this purpose, a "whole-time" officer is defined as "one who does not engage in the practice of medicine or in any other business, but devotes all his time to official duties."

Breweries and Beverages.—Production of cereal beverages by so-called "breweries" this year shows a decrease of almost 27,000,000 gallons below last year, it is stated at Prohibition Headquarters. There are 542 breweries manufacturing cereal beverages under permits, but permits have been denied or revoked in 228 instances. Prior to prohibition there was an annual production of 900,000,000 gallons of real beer, while the total output of breweries the past year, near bear and otherwise, was 189,000,000.

Druggists and Prohibition.—At the forty ninth annual convention of the National Wholesale Druggists Association in Cleveland, October 8-11, it was recommended that congressional aid be sought since their business has come into considerable disrepute since the government forced them to undertake the distribution of liquor for medicinal purposes. The delegates voted for a uniform narcotic drug law in all states, claiming that the Harrison Narcotic Law is weakened by conflicting legislation in many states.

National Social Hygiene Conference.—The annual National Social Hygiene Conference will be held in St. Louis, November 5-7, under the joint auspices of the American Social Hygiene Association and the Missouri Social Hygiene Association. Protective, legal, educational, recreational and medical measures for social hygiene will be discussed by Drs. Frank H. Ewerhardt, president of the state social hygiene association; Surg.-Gen. Hugh S. Cumming, Washington, D. C.; William F. Snow, general director of the American Social Hygiene Association, and Donald R. Hooker, Johns Hopkins University Medical School, Baltimore.

Nobel Prize in Medicine.—The council of the Karolinska Institute, Stockholm, has awarded the 1923 Nobel Prize in Medicine to Dr. Frederick G. Banting, London, Canada, and Dr. J. J. R. MacLeod, Toronto, for their discovery of insulin. They will receive $20,000 each.——The 1922 Nobel Prize in Medicine has been awarded, half to Prof. Archibald Hill, University College, London, England, for discoveries in the physiology of muscles, and half to Prof. Otto Mayerhof, University of Kiel, Germany, for research concerning oxidation and utilization of lactic acid in muscle. The 1921 prize in medicine was not awarded but added to the special medical fund (THE JOURNAL, Nov. 25, 1922, p. 1857). The 1922 prize was reserved until this year.

National Health Council.—The *Monthly Digest* of the National Health Council will be enlarged to eight pages at the New Year and will include a section on national health legislation.——"Working for Dear Life," a one reel film, is now complete and ready for distribution. It was produced by the Metropolitan Life Insurance Company on recommendation of the National Health Council and will be distributed free except for transportation charges.——Twenty new booklets on health for the public, published by the National Health Council will be issued about December 1. Some of them are: "The Baby," by Dr. Richard A. Bolt, Washington, D. C.; "Cancer," by Dr. Francis Carter Wood, New York; "The Heart," by Dr. Theodore S. Hart, New York, and "Love and Marriage," by Thomas W. Galloway, Ph.D., New York.

Prize Essays in Chemistry.—Arrangements have been made by the American Chemical Society to take charge of a prize essay contest, established to stimulate interest among high school students in the development of chemistry in the United States. Six prizes of $20 are to be awarded in each state and scholarships to Yale and Vassar as well as other universities will be given for the six best essays in the United States. These scolarships will include tuition for four years and $500 annually in cash. In order to aid students in preparation of the essays a set of five books, including Slosson "Creative Chemistry" and the Vallery-Radot "Life of Pasteur" is being sent to every accredited school in the country. The contest has also the approval of the Commissioner of Education of the United States. In addition to the national committee, separate committees will be appointed in each state to have charge of the contest.

Bequests and Donations.—The following bequests and donations have recently been announced:

Japanese Earthquake Relief Fund, $10,448,702, raised by the American Red Cross.

Abbott Hospital, Minneapolis, $500,000, under the will of O. C. Wyman of Minneapolis, and $250,000 for the Abbott Children's Clinic of the hospital, by T. B. Janney.

Avon, Ill., for the erection of a hospital, the principal of the $500,000 estate of the late Clara Saunders.

Van Wert (Ohio) County Hospital, $100,000, by the will of William Jones.

Grace Hospital and the Children's Hospital of Michigan, Detroit, and the Cottage Hospital, Grossepoint, stocks, bonds and cash to the value of $91,045, from the estate of Elizabeth A. McMillan.

Northwestern Hospital, Minneapolis, $20,000, by Mr. Waldo.

Staten Island (N. Y.) Hospital, $10,000, by the will of William G. Willcox.

Memorial Hospital, Matoon, Ill., $5,000, by Mrs. Florence H. Kistler of Denver.

Jane M. Case Hospital, Delaware, Ohio, $2,000, by the will of Mrs. Sophia W. White.

Mercedes (Texas) General Hospital, two lots at Ebony Park on which to erect a new building, by William Lingenbruck, formerly of Mercedes.

Mooresville, N. C., the large residence of Mr. and Mrs. Samuel A. Laurance for a hospital.

New East Mississippi Charity Hospital, Meridian, Miss., the furnishings for one entire ward, by the Meridian Exchange Club, and another by A. J. Lyon and William Lerner of that city.

International Promotion of Child Welfare.—The regulation of infant rearing centers, improvement of day nurseries, school hygiene, and the repatriation of juvenile delinquents were among the subjects discussed at the second ordinary session of the International Association for the Promotion of Child Welfare held at Geneva, July 28-30, 1923. The following resolutions were adopted:

1. Regulation of Infant Rearing Centers.—Because of the difficulty in supervising the care of infants placed out promiscuously, it was recommended that "rearing centers" be established, directed by qualified medical officers.

2. Improvement of Crèches.—(*a*) All day nurseries should be under the direction of a physician; (*b*) they should have separate rooms for the cradles, for the linen, for disinfecting purposes and for isolating patients; and (*c*) they should be open to the pupils of puericulture schools.

3. School Hygiene.—There should be close collaboration between the teacher, the school physician and the school nurse. The teacher should have a knowledge of the fundamental rules of hygiene. Each child should undergo a yearly examination, records should be kept and proper action should be taken as indicated by the examination. From a prophylactic point of view, the attention of the public authorities is called (*a*) to the importance of the medical examination from the standpoint of the teacher and (*b*) to the importance of dental hygiene and treatment.

The improved draft of this convention provides for the repatriation of minors of foreign nationality by the contracting states, with particular reference to minors without means of protection or support, and escaped delinquents, who have been taken from the authority of their parents or guardians. In every case the minor is handed over by virture of a decision duly given by the authority of the state of which he is a native. Provisions were made for the ratification of the convention, and for denouncement of the convention by any signatory state. Ratification comes into operation one month from the date of deposit of certificate of ratification.

FOREIGN

German Hospitals Closed.—During 1922 forty-five hospitals were closed in Prussia owing to financial stress, according to reports, including nine private hospitals with 1,049 beds in Berlin alone.

Bolivia Passes Eugenics Law.—A law requiring medical certificates for marriage, and prohibiting the marriage of persons suffering from tuberculosis or other infectious diseases was passed by the Bolivian chamber of deputies at La Paz, October 28.

Centenary of the Morison Lectures.—The centennial course of the Morison lectures on mental diseases and disorders of the nervous system, founded in 1823, was delivered by Dr. Alexander Blackhall-Morison, October 15, 16 and 17, in the Royal College of Physicians, Edinburgh.

Hospital News.—The new 30,000,000 franc hospital at Jette, Belgium, was recently opened. The king and queen attended the dedication ceremonies.——The Red Cross ship *Viking* has been fitted for a hospital to relieve the lack of hospital facilities in northern Norway. The ship contains a modern operating room, an isolation ward and forty-one beds, and a detention room.

Asylum for Children with Sequelae of Epidemic Encephalitis.—The Swiss Psychiatric Society has voted in favor of the necessity for an institution where children suffering from the sequelae of epidemic encephalitis can be given proper care and training. Dr. Jörger, Waldhaus, Masans bei Chur, is compiling data on the subject to ascertain the extent of the need for such an institution.

South African University News.—The Johannesburg town council has donated $100,000 to the University of Johannesburg Medical School, South Africa, and $25,000 to the Victoria Hospital.——Bids have been received for the erection of the new medical school at Grotte Schuur, near Cape Town, South Africa, at an approximate cost of $500,000.——Professor Mackie of the Cape Town University Medical School has been appointed professor of bacteriology at the University of Edinburgh, Scotland.

Medical News from China.—A storm of protest is being raised by Chinese physicians, according to the *China Medical Journal*, against the decision of the authorities to have all Chinese medical practitioners and herb shops registered with the Bureau for the Suppression of Drugs. The physicians and herbalists have threatened to strike unless the order is rescinded immediately.——The municipal council of Shanghai has opened a free clinic for the treatment of foreign seamen and indigent male foreigners with venereal disease.

Personal.—Prof. S. Recasens brought back with him from Argentina a gold plaque presented by the medical faculty of the University of Buenos Aires to Prof. Ramón y Cajal. The plaque was entrusted to him with much ceremony at the time a portrait of Cajal was unveiled in the university hall with addresses on the work of Cajal. At the latter's request, the plaque was delivered to him informally. Dr. Recasens was obliged to shorten his trip, it is said, on account of a fractured malleolus.——Dr. Max Thorek, Chicago, delivered an address on "Endocrine Function and Gland Grafting" at the Academy of Medicine at Rome, October 13.

Society News.—The Berlin Medical Society has closed its library owing to financial stress.——The French Society of Orthopedics met in Paris, October 12. The chief subjects of discussion were: "Pes Cavus," Dr. Laroyenne, Lyons; "Cysts of Bone," Dr. Roederer, Paris, and "Congenital Elevation of the Scapula," Dr. Delchef, Brussels.——The Medico-Chirurgical Society of Bologna, founded by Francesco Orioli in 1823, will celebrate its centenary in December.——The opening meeting of the Royal Society of Tropical Medicine, October 18, was preceded by a demonstration of the development of the malaria parasite in the mosquito. The president, Rear Admiral Sir Percy Bassett-Smith, delivered the inaugural address.

Government Services

Major Nichols Returns to Army Medical School

Major Henry J. Nichols, M. C., U. S. Army, has been appointed director of the laboratories of the Army Medical School, Washington, D. C.

Army Medical School Moves

The army medical school, Washington, is being moved from its downtown location to the new buildings erected by the government at the Walter Reed General Hospital. This is part of a comprehensive plan to establish an army medical center. The army veterinary school and the army nurses' school will also be transferred to the new center.

Army Medical Corps Examination

The Army Medical Corps will hold an examination at various stations throughout the country, Jan. 21, 1924. Successful applicants will be commissioned in the grade of first lieutenant. The medical corps of the army is now about thirty-six officers short of its quota.

Shortage of Naval Medical Officers

Lieuts. Wendall H. Perry, Walter J. Spencer and Albert H. Faber of the navy medical corps, resigned within the week of October 20, reducing the strength of the corps to 751 commissioned officers. Even with the reduction in the strength and appropriations for the navy there is now a shortage of forty-nine officers below the allowance by Congress.

Cabinet Discusses Reorganization

The Harding plan for reorganization of the federal departments of the government is receiving the attention of President Coolidge and has been the subject of discussion at recent meetings of the Cabinet. It is made known at the White House that the President does not favor that part of the plan which would consolidate the War and Navy Departments into a Department of National Defense. It has been intimated that the President has not reached a decision regarding the proposal to create a new department to be known as the Department of Public Welfare, in which would be included the Public Health Service and several of the bureaus whose functions are of a medical nature. It is apparent that the original plan as prepared by Walter F. Brown for the Harding administration will be subjected to numerous changes before being presented to Congress by President Coolidge.

Foreign Letters

PARIS

(From Our Regular Correspondent)

Oct. 12, 1923.

National Congress of Physical Education

The National Congress of Physical Education, which has just been held at Bordeaux, under the chairmanship of Prof. C. Sigalas, dean of the medical faculty of the University of Bordeaux, was of interest for the reason that consideration was given to the much neglected medical side of physical culture. The congress was divided into three sections: physiology, physical education and sport in general.

The Physiology of Physical Exercise

Dr. Maurice Boigey, an army physician, discussed exhaustively the effects of quantity and quality of exercise from the standpoint of respiratory exchange. He first referred to the estimations of energy expended made by measuring the loss of heat with the calorimetric apparatus of Atwater, Benedict, Cathcart and their co-workers, and then discussed simpler methods that measure the intensity and rate of exchange by determining the oxygen consumed and the carbon dioxid eliminated. With this method Boigey has studied the expenditure of energy during rest and during various forms of exercise, in subjects with and without athletic training, in walking, running, swimming, rugby football, rowing, pedaling on an ergographic bicycle, and bicycle racing. His researches show that the variations in carbon dioxid output parallel the intensity of the work, and afford an index of the quality of the muscular machine. For a given amount of work, the carbon dioxid eliminated is greater if the subject has received no previous training. In other words, the trained subject works more economically; his physiologic expenditure measured in terms of combustion is less than that of the man who is not trained. For a given exercise or game, the subject has reached the optimum of training when his physiologic expenditure is at a minimum.

The mechanism of shortness of breath in the runner or other athlete deserves particular study. The dyspnea is not closely correlated with the oxygen consumed, the carbon dioxid eliminated or the pulmonary ventilation. The stimulation of the bulbar respiratory centers, with which the dyspnea is associated, is related not only to the carbon dioxid content of the blood but also to products of incomplete oxidation liberated by the muscles under conditions of great effort. The most important of these products is lactic acid, which acts as a poison to the respiratory centers and gives an added effect to that of the carbon dioxid. Elimination of such acid bodies is slower than that of carbon dioxid. This explains why the dyspnea persists after the work is finished, and in spite of the fact that the percentage of carbon dioxid in the blood returns to normal after a few seconds. According to H. Magne, all that is necessary to diminish greatly the dyspnea is gradually to accustom the respiratory center to acid excitation. Some athletes make a practice of every now and then holding their breath as long as possible while working. Exercises of this kind tend to increase the resistance of the nervous centers to carbon dioxid, and are consequently of great advantage in athletic work. Magne has suggested that race horses might be trained to breathe mixtures of air with increasing percentages of carbon dioxid. In this way they would be immunized against the effects of acid intoxication of the respiratory centers, and the appearance of dyspnea during work would be postponed. Boigey raised the question whether this method of respiratory training might not be tried on human subjects.

Physiologic Classification of Sports

Boigey has endeavored to classify the various sports according to the expenditure of energy, measured by the respiratory exchange that each requires. Such a classification can be only approximate; it is not so much the form of movement or the time required for its accomplishment that determines the intensity of the respiratory exchange, but rather the speed with which the muscular action is effected, together with the resistance to be overcome. With these reservations, we may consider the general findings that Boigey has reached:

One hundred yard swimming races seem to require the most intense respiratory exchange. The 100 yard dash causes also elimination of much carbon dioxid; less, however, than the swimming races. Wrestling, long distance running and English boxing make essentially similar physiologic demands. French boxing, rowing, rope climbing, and rugby football constitute a group of exercises that cause the elimination of similar amounts of carbon dioxid, definitely less, however, than the last group. Tennis, bicycling, association football and punchball form another group somewhat lower in the scale of energy expenditure.

For an adult, forty-five minutes of gymnastic drill, such as is described in the army manual of physical education, is equivalent to the energy expenditure of a game of volley ball or a line march with a sixty pound load of the same duration.

Hypertrophy of the Heart

From time to time, sport and athletics have been charged with causing hypertrophy of the heart. To what extent is this true? Chaillet-Bert pointed out that the heart will react to training like the biceps muscle; its walls will become thicker and stronger. In order to deliver a larger volume of blood at each contraction, the heart will also become dilated. But this dilatation is active and not passive or pathologic; it can occur without danger because the walls are hypertrophied and are elastic; they, therefore, permit a return to former size when training is finished. This preliminary hypertrophy has been rightly termed "providential hypertrophy," as it protects from danger. But, while it is true that the heart, especially the left ventricle, may dilate without danger, this is not true for the valves. When the heart becomes dilated during training the inelastic valve cusps are drawn too far apart and do not readily retract again. Slight insufficiency results, and may give rise to a murmur. In a trained athlete such a murmur is a normal phenomenon, and it disappears when training is abandoned. On the other hand, if the heart is called on to make a supreme effort without previous training, the danger is considerable, for the walls, not having become previously hypertrophied, will become distended, just as does a weak abdominal wall, and may not be able to resume their former state. There will then be pathologic dilatation, which must be distinguished from the physiologic dilatation that occurs in the heart of the trained athlete.

Respiration and Circulation in Physical Culture

Dr. Chailley-Bert, collaborator of the late Professor Langlois, called attention to the fallacy of trying to judge lung capacity by external measurements (superior and inferior chest circumference). Such measurements take no account of the work of probably the most important muscle—the diaphragm. The chest measurements may be lamentably poor and the pulmonary ventilation good, or vice versa. In one case the diaphragm moves freely; in the other, this muscle is practically blocked. The spirometer gives fairly good results when the subject has learned to use it. While the spirometer measures vital capacity, it fails to differentiate between two other essential elements: the tidal air (the air that passes in and out in breathing) and pulmonary ventilation (the quantity of air breathed each minute). Many

athletes have an excellent vital capacity, yet get out of breath quickly. This appears, at first, incomprehensible, but closer examination will reveal that the tidal air is inadequate and, in consequence, pulmonary ventilation is poor. Such persons are shallow breathers; they have good lungs, but do not know how to use them. With proper training, they may become completely transformed.

Muscular work affects the circulatory system in two ways: by accelerating the rate to meet the needs and by increasing the volume of blood carried by each heart beat. The maximal physiologic limit of 160 beats a minute may be greatly exceeded during periods of great effort. In the trained athlete, the return to a normal rate takes place in a few minutes after moderate exercise. But the situation is quite different when a race is hotly contested, as when a cross-country run ends in a sprint. Formidable demands are then made on the whole organism. The pulse may reach 240 and the return to normal be long delayed. The organism is loaded with toxins, and an hour or even longer may be needed for their elimination. The same effects are produced by long distance races, marathons or six-day bicycle races. The pulse rate may exceed 200, and the return to rest conditions requires a long time. Here, other organs also are involved. The kidneys and the liver are subjected to severe strain, and these organs must be in perfect condition.

War Reminiscences of Professor Lejars

Dr. F. Lejars, professor of clinical medicine at the Faculté de médecine of Paris, has just published (Masson et Cie, Paris) an interesting and instructive book entitled, "Un hôpital militaire à Paris, pendant la guerre." The hospital in question is the Hôpital Villemin, Paris, in which, between Aug. 2, 1914, and June 6, 1919, 30,546 soldiers were treated: 18,290 medical, and 12,296 surgical cases (6,429 wounded at the front, 5,867 wounded behind the lines or presenting surgical affections). Besides his surgical experience, Lejars, as chief physician of this hospital, had a wide administrative experience, and his reflections, which are the outgrowth of this twofold experience, deserve serious consideration.

Lejars emphasizes the need of close cooperation between regular army physicians and the supplementary civilian physicians who are mobilized in time of war. His personal experience is typical of the conditions that existed. As a civilian surgeon, he had, before the war, taken part in so-called "periods of instruction" during which civilian physicians were supposed to become somewhat familiar with military affairs; he admits that he learned little, with the consequence that, when he was suddenly invested with military functions, he found himself utterly ignorant of the practical operation of a military hospital.

In time of war, civilian physicians are mobilized and placed under the orders of the chiefs of the army medical corps. After demobilization, all collaboration at once ceases, and the breach becomes as wide as ever. This condition of affairs is both sad and anomalous. Since the medical profession, as a whole, must participate in war, it should be allowed to participate, to a certain extent, in the preparations for war. At the beginning of the recent war, there were only 1,707 physicians and surgeons on the skeleton staff of the army medical corps, and 19,474 civilian physicians and surgeons were mobilized to fill the complement. Is nothing to be gained from this long period of cooperation? Lejars expresses surprise that, when demobilization took place, hospital chiefs and leading attending physicians were not asked to submit reports and recommendations on their observations in time of war. Most of these physicians, during the period that followed the armistice, would gladly have consented to draft such a document, and these documents would have proved to be of the greatest value.

Speaking of trained nurses, Lejars states that, after entering the military service, he observed frequently the difference in appearance, cleanliness and functioning of sanitary units provided with trained nurses as compared with those that were not so provided. He holds that the sterilization and preparation of surgical dressings, preparations for operations, the care and supervision of men with wounds and after operations, are essentially woman's work; but the women must be trained, must have had practical experience, and must be devoted to duty in the military sense of the word—without reserve, hesitation or question—with a willingness to "serve" and a happiness in "serving." He regards it as the highest duty of the Red Cross to train as many women as possible, both practically and in the discipline that belongs to the military service.

Death of Dr. François Helme

Dr. François Helme, formerly a collaborator of the *Presse médicale*, died recently at the age of 70. Early in his career, he specialized in otorhinolaryngology; he took up medical journalism, and was noted more for the qualities of his style than the content of his articles. Not being well grounded in scientific questions, he concerned himself more with professional questions. He contributed also a column of medical news for the general public to one of the daily papers.

LONDON

(From Our Regular Correspondent)

Oct. 15, 1923.

Typhoid Due to Contaminated Fish

Outbreaks of typhoid due to eating shellfish taken from estuaries polluted with the sewage of towns are now well recognized. The health officer for London, in his last report, points out another way in which typhoid may arise from sewage pollution. He shows that for sixteen years there was a very high death rate in London from typhoid, a lower level for the period 1885-1901, then a steep decline to the present rate, and a disappearance of the autumnal outbreaks. He finds that one of the main causes of typhoid is fish, which have been responsible for more than a dozen outbreaks in London or its neighborhood. The fish are immature plaice which are fried and sold ungutted, because of their small size. Efforts have been made by the fish trade to prevent the sale of fish under a certain size, and these immature plaice have gone out of favor with the friers. But from the autumn of 1921 onward there has been some evidence of increase in the amount of small plaice sold in London. Action has been taken by the International Council of Fisheries to procure an international agreement to prevent all fishing on the "nursery grounds" where these fish are obtained.

The Panel Crisis

The great struggle between the panel physicians and the government has begun. The Insurance Acts Committee of the British Medical Association has sent to the ministry of health a long letter in which the terms given in my last letter are rejected. The committee complains that the minister, instead of regarding the insurance system as a matter affecting the public health of the nation, appears to have mainly directed his attention to the commercial question of the lowest sum for which medical attendance can be obtained for insured persons. The committee views the system as set up not merely for attendance on certain wage earners when ill but to promote the national health by preventive as well as curative methods, by facilitating research into the beginnings of disease and by making investigations and reports on health matters. For this it is necessary to attract and retain every type of physician, from the new recruit to the experienced and successful family physician. A rate of

remuneration which would exclude the latter would deprive the service of valuable members. The committee disputes the minister's contention that the present capitation fee is more remunerative than private practice. It admits that clubs are frequently established at rates below that of the insurance service, but this is because of difficulty in paying the usual private rates when there is no state aid. To the minister's argument that the reduced capitation fee now in force must have been satisfactory since the number of entrants into the service increased after it was accepted, the committee replies that the increase was probably due to physicians who had left the army and returned to general practice. Moreover, as long as the panel system exists, physicians in industrial areas must join it. As to the comparison made by the minister with the remuneration of civil servants, the committee gives figures to show that the panel physicians' postwar rise of remuneration never reached the height which that of the civil servants did, and the new proposal will leave it lower. Moreover, the physician is at a great disadvantage compared with the civil servant in making adjustments of his expenses and ways of life, and the civil servants' pension has been overlooked in stating the minister's case.

Since the beginning of the working of the Insurance Act, a considerable reduction has taken place in the claims for sickness benefit, indicating an improvement in the health of the industrial classes. This the minister attributes to a number of factors—improvement in the administrative methods of the friendly societies, economic causes, such as the great demand for labor during the war. The reduction during the war, he argues, cannot have been due to the efficiency of the medical service, for the shortage of physicians in the country rendered the maintenance of even a minimum service difficult. The committee agrees that many factors combined to produce the result, but thinks that the chief factor was the ability of a large section of the population to take advantage of medical advice at an early stage of an illness without fear of contracting a physician's bill. The committee views with alarm the hint that if improvements in medical education and skill or the extension of preventive medicine reduce the number of individual items of service rendered, this should justify reduction in the pay of those instrumental in thus conducing to the health of the insured population. The committee holds that the proper capitation fee is to be arrived at by taking the $2.75 fixed in 1920 by arbitration and calculating the sum to which that would correspond at the present cost of living. This would be about $2.50.

The minister of health has not yet answered this letter, but there is little reason to suppose that he will depart from his offer. The feeling in official circles is that for the panel physicians in large towns the offer is sufficient. But there is one point on which some concession may be made. The committee drew attention to the position of rural physicians whose insured patients are few and scattered over a far wider area than in towns. It is recognized that the rural physicians have special claims for consideration, and it is expected that the minister will indicate his willingness to inquire further into their case and see whether something more can be done for them on the basis of a mileage allowance or increase of the capitation fee. On the whole, the lay press is opposed to the physicians. It says that as other workers have submitted "with more or less grace" to reductions in the inevitable reaction following the inflation of prices due to the war, physicians should do likewise. It is true that such reductions have taken place; but they have been submitted to with very little grace. They have been and still are resisted whenever a trade combination is strong enough to do so. Indeed, the panel struggle is only an example of widespread industrial conflict produced by the enormous financial disturbance following the war. A mass meeting of London panel physicians amounting to 650 was held yesterday. With only five dissentients, a resolution was carried declaring that the remuneration offered by the minister is inadequate and urging support in every possible way of the Insurance Acts Committee of the British Medical Association to obtain an increased offer. It was pointed out that the public should be given to understand that there was no intention to "strike" in the ordinary sense. If the physicians resigned from the panel service it would only mean that the patients would be attended as private patients. Those who could not afford to pay ordinary fees would be attended at reduced ones, and those who could pay nothing would be attended free of charge. Similar resolutions were passed at meetings at Liverpool and other places. On the other hand, the representatives of the friendly societies maintain that the minister's offer is too high and that the fee should revert to the prewar one. A conference of representatives of all the societies is to be held in London. It is anticipated that an emphatic protest will be made against the minister's proposals and that the societies will pledge themselves to oppose any legislation to give them effect.

The minister is in the unfortunate position of a judge or arbitrator between two contending parties bitterly opposed to each other. He has endeavored to solve the problem by taking a middle course and has failed to satisfy either party. It may be anticipated that whatever he does, this will be the result. The root of the trouble is that the panel system is a socialistic scheme copied from Germany by Mr. Lloyd George and taken up with undue enthusiasm. Though there are many socialists in this country and though we have had to endure in recent years a good deal of socialistic legislation, the temperament of the English people is not socialistic but individualistic, and they do not readily take to the state regulation of such a personal thing as medical attendance. Hence a considerable proportion of the profession will not have anything to do with the panel system, and also a number of those entitled to service under it prefer to pay private medical attendants, although already paying for attendance under the act. The subsidy provided by the state, on the other hand, is a strong force in reconciling people to the system. For the insured there is the famous (or the opposite, according to political opponents) argument of Mr. Lloyd George, "ninepence for fourpence." By this he meant that while making the insured contribute 8 cents a week he provided them with an insurance which cost 18 cents. For the physicians the act had the advantages of abolishing dispensing, collection of debts and the making of bad debts, and above all insuring payment for a class of patients which paid little or nothing before. That the incomes of physicians have, on the whole, been considerably increased by the act is beyond doubt. But their work has also been increased, and the question of the proper rate of payment still remains.

In all controversies on the act, the accusation of very perfunctory attendance by physicians is made. That there is some ground for this cannot be disputed, but the extent of the evil is very difficult to assess. It is pointed out on the side of the physicians that the number of complaints is remarkably small, in view of the millions of persons treated. On the other side, the rejoinder is made that the patients put up with a good deal before making, if ever, any complaint. Perhaps the greatest defect is that patients with little or nothing the matter—nothing for which they would come if they had to pay—can come as often as they like to the physician and waste his time. It might be thought that all he has to do is to give them any simple directions that may be necessary and get rid of them. But there exists a robust faith in drugs among the English people, particularly in the working classes, and the physician will not sacrifice his popularity by refusing to prescribe. These people do not

deserve or require more than perfunctory attention, but unfortunately its practice may easily spread beyond them, partly for the very reason that they waste time required for real illness. On the other hand, it is claimed that such free access to the physician enables him to treat disease at the beginning—a thing often previously impossible in persons who avoid taking advice because of the expense.

The Centenary of the Lancet

The *Lancet* has begun the celebration of the centenary of its existence by the publication of a special number in which the story of its foundation and early struggles is told once again. The first issue, a small octavo, appeared Oct. 5, 1823. The editor, Thomas Wakley, a recently qualified young physician, had no literary experience, position or influence of any kind. There were at the time several established medical periodicals, but no weekly one. Wakley was animated by a burning hatered of the gross abuses that existed in the hospitals and medical corporations. He could write plain and forceful English. He vigorously denounced the small and privileged class of hospital physicians who controlled medical teaching and admission to the profession. For the large fees they extracted from students they gave only the most perfunctory teaching; they held their positions when age had rendered them incapable, and appointed their successors by nepotism. They even tried to prevent the publication of their lectures, an innovation in those days. Wakley's attacks were vigorous, often to the extent of scurrility, and led to numerous libel actions. But he bore down all opposition and brought about reform of all the abuses. After this stormy beginning, the *Lancet* settled down to a career of eminent respectability and usefulness. It became the leading medical journal of this country. For the bitter hostility of the leaders of the profession, it exchanged their unanimous support and approval. This is shown by the numerous messages of congratulation which it has received on completing its centenary. Such is the whirligig of time.

Poisoning Due to a Thunderstorm

The inquest has just been concluded on a man who lost his life under unprecedented circumstances. On the night of July 9-10, a thunderstorm of great violence broke over London and continued for many hours. A healthy man, aged 27, was filling sacks with metal dross at a foundry while the storm was in progress. He was taken ill next day and complained of internal pains, while his skin gradually became copper colored. The view was taken by his physician that death was due to poisoning by arseniuretted hydrogen (hydrogen arsenid), which might have been generated from the metal dross. This was confirmed by the finding of arsenic in the dross and also arsenous oxid in the viscera. At the inquest, Mr. Alfred Munday, chief metallurgist to the foundry, said that the sacks were thought to be in a dry place, but that this extraordinary storm caused them to get wet. He had gone out of his way to consult some of the world's most eminent experts on the subject, but none of them had heard of a similar case. A foundryman who was working in the same shed as the deceased gave evidence. He was also taken ill next day. He began to fall about, had abdominal pain on the right side, and turned a yellow and copper color. He was admitted to St. Thomas' Hospital, where his chart was marked "trade poisoning." He was 8 yards away from the man who died, but was not doing the same work. The coroner found that death was due to poisoning by arseniuretted hydrogen.

No evidence was given as to the exact manner in which the arseniuretted hydrogen was generated. I am indebted to a mineralogist, Dr. Alfred Brammall, mineralogist and lecturer at the School of Mines, South Kensington, for the following commentary on the evidence. Many copper ores are essentially copper arsenids or sulpharsenids. In the ordinary course of metallurgical treatment, both the arsenic and the sulphur should be oxidized and volatized, but it is possible that appreciable traces of these substances might remain. It is difficult, however, to see how the addition of water could produce any chemical reaction that would liberate arseniuretted hydrogen. But if the copper chanced to be "earthed" and conducted lightning from girders or otherwise downward, chemical action would be considerably quickened and a reaction might occur. By the electrolysis of water, nascent hydrogen might be generated, and on combining with the traces of arsenic present the very deadly arseniuretted hydrogen might be generated. But the difficulty is, how came it about that the copper dross contained sufficient arsenic for the generation of a poisonous quantity of arseniuretted hydrogen?

HOLLAND

(From Our Regular Correspondent)

Oct. 7, 1923.

Smallpox Vaccination

According to statistics published in the recent census report for the Netherlands (1920), there appears to be at present 7 per cent. of the population that is not vaccinated against smallpox. Thirty per cent. may be considered immune, and 63 per cent. have acquired partial immunity. In a recent letter I mentioned that vaccination is compulsory only for school children. Revaccination is not common except in the army. In the Dutch East Indies, on the other hand, the regulations are more strict and the whole population is revaccinated every eight years.

The Crusade Against Alcoholism

The commission for combating alcoholism in the Dutch East Indies was appointed in 1918; its first task was to inquire into and, when possible, to approve the enforcement of all recent local legislation. The scope and operation of the prohibition law of the United States have also been studied. After numerous investigations, the commission has decided to suppress only excesses, endeavoring to create, at the same time, a public sentiment against the abuse of alcoholic beverages. It was thought unwise to pass a prohibition act applicable only to the indigenous population. The best and the least troublesome means of solving the question, it was held, would be to raise the price of alcohol beyond the reach of the general population and to prohibit the sale of spirituous beverages to children under 16 years of age.

Experimental Tar Cancer

The international conference for the experimental study of cancer met at Amsterdam under the chairmanship of P. Rotgens and decided on the formation of a permanent society for effective coordination of all research work on experimental cancer. Studies by Bang, Rentschländer and Dulmon on the histogenesis of tar cancer and certain divergences between the opinions of the Danes and the Netherlanders deserve mention.

The Danes regard every papilloma as a malignant growth, even though all the characteristics are benign. The Netherlanders, on the contrary, recognize the difference between a malignant and a benign tumor. Numerous comprehensive studies have been published by Rainy, Waterman, Block and others.

Personal Adaptability and the Industrial Schools

Many modern technical or industrial schools do not admit students to the various courses of instruction until they have been examined by a physician and their probable aptitude for a given trade or vocation has been established. This medical examination may be given, at present, by any physi-

cian. But it is becoming progressively more obvious that industrial medicine must specialize if better selections are to be made, not only in avoiding the recommendation of a trade or calling that is incompatible with the individual make-up, but also in preventing many accidents among workmen. It has been noted that accidents occur most frequently among those who are not adapted to their work. For this double reason—individual and social—it is of the greatest importance that better principles for selecting candidates for the industrial schools be established. With this object in view, the executive committee of the Nederlandsche Maatschappij tot Bevordering der Geneeskunst has addressed a communication to the minister of public instruction and sciences requesting that the statutes pertaining to technical and industrial instruction be remodeled. The main item is the selection of physicians with special training in industrial medicine for the task of selecting entrants for the technical schools.

Mortality from Endonasal Operations

In connection with a death from meningitis following an operation for nasal polypi, H. Burger of the Netherlandic Society of Otorhinolaryngology has outlined precautions that should be taken to lessen the risks from postoperative complications. Not only must the indications for the operation be precise, but the most rigorous technic must be carefully adhered to. Intervention in cases of acute infection must be avoided. He recommends tamponage in all endonasal affections, and in the case of drainage of suppurative foci advises extending the operation far enough to open the last infected focus.

The Qualification of Specialists

Following a campaign launched for the purpose of establishing the status of medical specialists, the Netherlandic Ophthalmologic Society has instituted an inquiry among its members. Under present conditions, numerous abuses arise from the fact that a medical diploma confers on every physician the right, without special preparation, to style himself a specialist in any branch of medicine he may choose. The questionnaire sent to all members of the Ophthalmologic Society takes up various aspects of the problem and asks: Shall the right of the physician to style himself a specialist be conceded and preserved? Is it advisable to require the sanction of some controlling body that would determine the qualifications of the would-be specialist? If the need of a controlling body is accepted, should its authority be exercised in a legal manner under the supervision of the state authorities, or should the medical associations be the sole judges? Should the basis of sanction be the ability to pass a satisfactory examination before a special board, or should sanction be based on satisfactory work performed for a given period in a recognized official clinical service?

The referendum took up also other questions of more general nature; for instance, as to whether it was necessary, in preparation for a special field of work, for a student to take the medical course required for the general practitioner, or whether it would be advantageous to allow a variation from the general course from the start, and to permit selection of special studies directed toward the particular branch of medicine to which he intended to devote himself.

The Ophthalmologic Society, as a whole, declared itself in favor of some modification of existing conditions, looking toward a more efficient control of specialization in medicine. The most practical solution, or at least the one that seemed to meet with the most general approval, was a stipulation requiring a physician who desires to take up a specialty to spend at least two years as an assistant in that field of the hospital service. Before adopting formal conclusions, the society decided to get in touch with other societies, with the object of securing a united front as to the changes needed.

Spontaneous Cure of Pulmonary Echinococcosis

Dr. De Wilde has reported to the Society of Electrology and Radiology a case of spontaneous cure of an echinococcus cyst of the lung. It was the case of a man in whom the roentgenographic examination had revealed a clearly circumscribed lesion at the base of the right lung. Puncture brought forth a colorless fluid, containing no cells or albumin. One-half hour after the puncture, a frank urticaria developed. The Weinberg test proved positive. Three months later, a second roentgenographic examination showed that a marked reduction in the volume of the cyst had occurred. Four months afterward, the patient vomited a foul-smelling fluid containing many false membranes. A third roentgenographic examination made at this time discovered the fact that the shadow perceived previously at the base of the right lung had almost disappeared. Something over a month later, it was found that the patient presented no further morbid symptoms. In this connection, also Drs. Hertzberger and Keyser stated that such spontaneous cures were not infrequent.

BERLIN

(From Our Regular Correspondent)

Oct. 6, 1923.

Radium: Distribution, Cost and Manufacture

The subject of radium presents considerable interest to physicians in general and to American physicians in particular. A chemical engineer recently published an article on radium, from which I take these excerpts: Although radium is found in many parts of the world (for example, in Bohemia, Portugal, Australia and England), the United States has been until recently the chief producer. It is estimated that at present there is in use in the United States 150 gm. of radium, worth approximately $20,000,000, around 90 per cent. of which was derived from the carnotite deposits of Colorado. This American radium ore contains about 2 per cent. uranium oxid and is found interstratified with the rocks, from which it is extracted by diamond drills. It is sorted by hand and is transported by mule teams to a distant railway. Since the deposits of radium ore are widely scattered, and about 1 kg. of acid is required to work 1 kg. of ore, it is not economical to extract the radium where the ore is found. Collection and transportation of the ore are attended with difficulties, and the chemical processes are complicated; from 200 to 400 tons of radium ore must be worked over to secure 1 gm. of radium. Radium is a product of the decomposition of uranium, and radium ores contain about 1 part of radium to 3,200,000 parts of uranium.

Important discoveries of radium-bearing deposits have been made in Katanga province of the Belgian Congo, and the ore contains a much higher percentage of radium than the American carnotite. The Congo radium ore has to be transported about 2,000 miles down the Congo River and across the Atlantic to Antwerp. This is more economical than working the ore in the interior of Africa. In spite of obstacles, the Belgian radium can be sold more cheaply than the American product. In consequence, many American mines have been obliged to close down, and the price of radium has dropped to $70 per milligram.

In extracting radium, the ore is first ground and then leached. The solution is treated with sulphuric acid to precipitate the insoluble radium-barium sulphate. The precipitate is then changed into the soluble carbonate, and the resulting solution is converted into bromid and afterward into chlorid. Radium is always associated with barium, and, in order to separate the radium chlorid from the barium chlorid, advantage is taken of the fact that in saturated solutions the former is less soluble and crystallizes more readily than the latter. About 2,200 separate crystallizations are required in order to produce radium chlorid of 95 per cent.

purity. Over the troughs containing radium solutions, large ventilators are constantly in action, to drive off emanations and prevent precipitation of radium in the workroom. It is not dangerous to handle freshly precipitated radium sulphate, as this preparation does not begin to break down until from three to four days after it is precipitated. Workmen who continually handle radium salts develop, after a time, a condition of anemia, and it may be necessary to send them away, for a time, to recuperate.

Personal

Prof. F. Martius, for many years director of the University Clinic in Rostock, died in October at the age of 73. He was appointed staff physician in Gerhardt's clinic and a university instructor in 1887, became assistant professor and director of the medical policlinic in Rostock in 1891, and in 1892, after the death of Thierfelder, director of the medical clinic. Martius is best known for his interpretation of modern constitutional pathology. In his autobiography, published in the beginning of this year, he says, "In the theory of pathognostic hereditary transmission, I think I may rightly claim to have been a pathfinder and pioneer worker." He first expressed his views in 1889 in an address "Krankheitsursachen und Krankheitsanlagen," and he has supported and developed them since in many articles and addresses. His paper on the subject before the Congress of Internal Medicine, in 1905, was especially noteworthy. His other researches have been in the fields of diseases of the heart, stomach and nervous system. His so-called marking method, proposed in 1888, constitutes an original method of examination in the diagnosis of heart disease. His researches on the quantitative determination of the gastric contents have been embodied in a monograph, "Die Magensäure des Menschen," published in collaboration with Lüttke in 1892. The wide extent of his literary activity is evidenced in his autobiography, which lists sixty-eight articles and treatises. Martius possessed a high type of intellect and was distinguished for his critical abilities. His pleasing manner procured him many friends, but his frank defense of his views also brought him many vigorous opponents. At the end of his career he had the satisfaction of knowing that many of his new views had been accepted.

Marriages

EDWARD PIERCE LENTZ SHOPE, Morristown, N. J., to Miss Elizabeth Louise Healy of Narberth, Pa., September 8.

DONALD SCOTT VAN NOSTRAND, Binghamton, N. Y., to Miss Camille Maria Lucia of Ridgewood, October 15.

FRANKLIN CHAMBERS MCLEAN, Chicago, to DR. HELEN VINCENT of Boston, at Peking, China, recently.

CLEON ABRAHAM NAFE, Indianapolis, to Miss Eunice Katherine Shouse of Lexington, Ky., October 20.

WILLIAM NEWTON HUGHES, Manton, R. I., to Miss Pauline A. Barrows of Providence, September 8.

R. EARLE SMITH, Grand Rapids, Mich., to Miss Celia Netzorg of Ithaca, at Chicago, September 16.

DENNIS MICHAEL O'DONNELL to Miss Florence H. Clark, both of Ortonville, Minn., in September.

VINTON ARTHUR BACON to Miss Esther Charlotte Richmann, both of Casper, Wyo., September 27.

HARRY D. BENWELL to Miss Zoe M. Collins, both of Grand Forks, N. D., in September.

FRANK PETER FRISCH, Gibbon, Minn., to Miss Palma Nelson of Fairfax, in September.

FREMONT ALISTER CUMMINS to Miss Dorothy Cassill, both of Los Angeles, recently.

KARL B. RIEGER, Apple River, Ill., to Miss Lillian B. Hall of Chicago, October 6.

SAMUEL PALEG to Miss Jeanette Rubin, Both of New York City, October 21.

Deaths

Boris Sidis, Portsmouth, N. H.; Medical School of Harvard University, Boston, 1908; at one time associate psychologist and psychopathologist to the New York Pathological Institute, and the New York State hospitals; director of the Psychopathologic Hospital and psychopathologic laboratory of the New York Infirmary for Women and Children; proprietor of the Sidis Psychotherapeutic Institute; formerly associate editor of *Archives of Neurology and Psychopathology* and the *Journal of Abnormal Psychology;* author of "Psychology of Suggestion," "Philistine and Genius," "Experimental Study of Sleep," and other works; aged 55; died suddenly, October 23.

Lay Gordon Burroughs ⊕ Collinsville, Ill.; University of Maryland School of Medicine, Baltimore, 1906; city health officer; past president of the Madison County Medical Society; president of the board of education; served in the M. C., U. S. Army, during the World War; aged 43; died, October 7, at the Good Samaritan Hospital, Zanesville, Ohio, of a skull fracture received in an automobile accident.

Merritt O. Badger, Branford, Conn.; Medical Department of the University of the City of New York, 1882; spent thirty years in South America; formerly surgeon to the Guatemala Central and Pan-American railroads; appointed by the Rockefeller Foundation to head its yellow fever work in Guatemala in 1915; aged 64; died, September 23, of heart disease.

Paul Stuart Hunter, Denver; University of Colorado School of Medicine, Denver, 1904; served as chief interpreter for the M. C., U. S. Army, Relief Expedition during the Boxer War in China; member and at one time secretary of the Colorado State Board of Health; aged 46; died, October 20, at St. Luke's Hospital, of pneumonia, following an operation.

Aubrey Francis Higgins, Sacramento, Calif.; University of Pennsylvania School of Medicine, Philadelphia, 1895; member of the California Medical Association; served in the M. C., U. S. Army, during the World War; aged 49; died, October 17, at the home of his sister in Oakland, from a self-inflicted bullet wound while suffering from ill health.

James Seth Cooley, Mineola, N. Y.; Medical Department of the University of the City of New York, 1877; member of the Medical Society of the State of New York; for thirty-one years secretary of the Medical Society of the County of Nassau; member of the board of education; aged 78; died suddenly, October 20, at Albany.

Sidney Dix Foster ⊕ Toledo, Ohio; Medical College of Ohio, Cincinnati, 1900; formerly on the staff of the Maternity Hospital; served in the M. C., U. S. Army, in France, during the World War, with the rank of captain; aged 50; died, October 13, at the Flower Hospital, following an operation on the gallbladder.

Charles Moran Atchison ⊕ Lieutenant, M. C., U. S. Navy, San Francisco; Tufts College Medical School, Boston, 1908; served during the World War in the transport service; formerly a practitioner in Massachusetts; aged 40; died, September 27, at the Naval Hospital, Vallejo, Calif., of gastro-enteritis.

Henry Gaither Perry ⊕ Montgomery, Ala.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1887; treasurer, 1906-1911, and secretary since 1911 of the Medical Association of the State of Alabama; registrar of vital statistics of the state board of health; aged 63; died suddenly, October 9, of heart disease.

Peter Ralph Egan ⊕ Major, M. C., U. S. Army, retired, New York; Medical Department of Columbia College, New York, 1880; Spanish-American War veteran; aged 68; died, October 1. Dr. Egan entered the regular army as assistant surgeon in 1882, and was retired for physical disability, April 2, 1906.

Clifton Allen Thomas ⊕ Fredonia, Kan.; Kansas City (Mo.) Medical College, 1905; past president and secretary of the Wilson County Medical Society; served in the M. C., U. S. Army, in Siberia, during the World War; aged 43; died, October 10, at Albany, Ore., of tuberculosis.

Benjamin A. Griffith, Swan Creek, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1878; member of

⊕ Indicates "Fellow" of the American Medical Association.

the Illinois State Medical Society; Civil War veteran; formerly postmaster of Monmouth; aged 79; died, October 10, from the effects of a fall.

Silas Youree Alexander, Shreveport, La.; Medical Department of the Tulane University of Louisiana, New Orleans, 1903; member of the Louisiana State Medical Society; aged 42; died, September 25, following an operation for intestinal obstruction.

Jacob Clark McCreary, Louisville, Ky.; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1902; aged 60; died, October 8, at St. Anthony's Infirmary, following an operation on the gallbladder.

Charles Addison Hayes ✠ Chippewa Falls, Wis.; Rush Medical College, Chicago, 1877; for many years president of the school board and physician to the Chippewa County Asylum for Chronic Insane; aged 72; died, October 12.

Elmore Ellsworth Grant, Houston, Texas; University of Louisville (Ky.) Medical Department, 1890; president of the board of education; aged 62; died, October 12, at St. Joseph's Infirmary, following a long illness.

Whiting Sweeting Worden, Yokohama, Japan; Syracuse (N. Y.) University College of Medicine, 1886; resident physician to the American consulate at Yokohama; aged 65; was killed in the recent earthquake.

Julius Egbert Griswold, Rockyhill, Conn.; Medical Department of the University of the City of New York, 1880; member of the Connecticut State Medical Society; aged 68; died, October 5, of senility.

James William Thomas ✠ Seattle; Willamette University Medical Department, Salem, Ore., 1902; Jefferson Medical College of Philadelphia, 1903; aged 55; died, October 7, following an operation.

James Joseph Fitzgerald, New York; Fordham University School of Medicine, New York, 1913; served in the M. C., U. S. Army, during the World War; aged 32; died, October 16, of pneumonia.

Oscar Waldo Roberts, Springfield, Mass.; Boston University School of Medicine, Boston, 1879; formerly on the staff of the Hampden Homeopathic Hospital; aged 74; died, October 16, of pneumonia.

Arthur Cowton Heffenger ✠ Lieutenant, M. C., U. S. Navy, retired, Portsmouth, N. H.; University of Maryland School of Medicine, Baltimore, 1875; aged 70; died, October 16, following a long illness.

Elias Davis Gordon, Brooklyn; Eclectic Medical College of the City of New York, 1902; on the staff of the Beth Moses Hospital, where he died, October 18, aged 47, following an operation.

Bert A. Gooding, Fort Collins, Colo.; College of Physicians and Surgeons, Keokuk, Iowa, 1887; member of the Colorado State Medical Society; aged 58; died, October 11, of cerebral hemorrhage.

Benjamin Foster Fyke, Springfield, Tenn.; Medical Department University of Nashville, Tenn., 1877; member of the Tennessee State Medical Association; aged 68; died, October 22.

Fordyce Grinnell, Pasadena, Calif.; Miami Medical College, Cincinnati, 1873; member of the California Medical Association; aged 79; died, October 5, at Newhall, of senility.

Robert James McMurray, Sebring, Fla.; Medical College of Ohio, Cincinnati, 1878; Chicago Medical College, 1885; formerly a practitioner in Illinois; aged 70; died, October 7.

William J. R. Thonssen ✠ Washington, D. C.; Howard University School of Medicine, Washington, 1888; also a Methodist minister; aged 72; died, October 14, of myocarditis.

James E. Elliott, Bozeman, Mont.; Medical Department University of Indianapolis, Ind., 1904; member of the Medical Association of Montana; aged 40; died, October 3.

Ira L. Turman, Cynthiana, Ind.; University of Louisville (Ky.) Medical Department, 1894; member of the Indiana State Medical Association; aged 54; died, September 14.

Henry Clay Burnum, Trussville, Ala.; Baltimore (Md.) Medical College, 1893; member of the Medical Association of the State of Alabama; aged 54; died, October 11.

Columbus Few, Hendersonville, N. C.; University of Maryland School of Medicine, Baltimore, 1875; Confederate veteran; aged 75; died, October 3, of senility.

Abraham P. Parker, Kirklin, Ind.; Kentucky School of Medicine, Louisville, 1893; member of the Indiana State Medical Association; aged 68; died, September 5.

George Washington Earle, Hermansville, Mich.; University of Buffalo Department of Medicine, 1872; aged 74; died, October 10, following a long illness.

Asbury Lane Jarratt, Batesville, Miss.; Medical Department University of Louisiana, New Orleans, 1861; Confederate veteran; aged 88; died, October 11.

Schiller B. Poland, Gray, Ga.; Atlanta (Ga.) Medical College, 1887; member of the Medical Association of Georgia; aged 62; died, October 8, at Macon.

Albert Edward Dean, Brocton, N. Y.; University of Buffalo Department of Medicine, 1895; formerly health officer of Portland, aged 53; died, October 13.

Jacob Frank Howe, Brooklyn; Medical Department of Columbia College, New York, 1871; aged 75; died, October 18, of heart disease and bronchitis.

William J. Pohrer, St. Louis; St. Louis Medical College, 1884; aged 63; died suddenly, October 11, of heart disease, while testifying in a damage suit.

Byrd B. Barnett, Holladay, Tenn.; Vanderbilt University Medical Department, Nashville, 1882; aged 71; died, October 3, of acute articular rheumatism.

William Buchanan Burke, Danville, Ky.; Missouri Medical College, St. Louis, 1867; Civil War veteran; aged 78; died, August 21, of arteriosclerosis.

Hugh Hamilton ✠ Harrisburg, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1871; aged 86; died, October 7, of senility.

Edward Byron Silsby ✠ Rockland, Me.; Medical School of Maine, Portland, 1882; proprietor of the Silsby Hospital; aged 70; died, October 14.

Louis Lichtschein ✠ New York; Bellevue Hospital Medical College, New York, 1885; aged 65; died, October 18, of carcinoma of the omentum.

Matthew F. Lorman, Philadelphia; Jefferson Medical College of Philadelphia, 1880; Civil War veteran; aged 80; died, October 13, of senility.

L. Edward Johnson, Cambridge, Md.; Long Island College Hospital, Brooklyn, 1864; Civil War veteran; aged 87; died, October 3, of senility.

William Whittington, Dinuba, Calif.; Missouri Medical College, St. Louis, 1880; aged 70; died, October 12, of diabetes mellitus.

Lorenzo Dow Jackson, Hammond, Ind.; Physio-Medical College of Indiana, Indianapolis, 1889; aged 74; died suddenly, October 20.

Phillip H. Oyler, Los Angeles; Louisville (Ky.) Medical College, 1878; formerly a practitioner in Illinois; aged 77; died, October 15.

James Madison Crawford, Asheville, N. C.; Atlanta (Ga.) Medical College, 1884; aged 69; died, October 7, at his home in Weaverville.

Henry Gregory, Laurel, Ind. (licensed, Indiana, 1897); formerly city health officer; aged 71; died, September 2, of heart disease.

Gustav J. Zulch, Denver; Jefferson Medical College of Philadelphia, 1882; aged 69; died, October 20, of cerebral hemorrhage.

William J. Wheeler, Commerce, Texas; Atlanta (Ga.) Medical College, 1890; aged 55; died, October 5, following a long illness.

William Shattuck, Coal Grove, Ohio; Columbus (Ohio) Medical College, 1882; aged 70; died, October 2, following a long illness.

L. Samuel Manson, New York; Medical Department of Columbia College, New York, 1884; aged 59; died, October 8.

Mark Bell Penick, Kinderhook, Ill.; Eclectic Medical Institute, Cincinnati, 1865; aged 89; died, October 3, of senility.

Frank A. Chitwood, Connersville, Ind. (licensed, Indiana, 1899); aged 76; died, September 14, of senility.

Robert J. O'Reilly ✠ St. Louis; St. Louis Medical College, 1868; aged 78; died, October 5, of senility.

J. M. Hodges ✠ Detroit; Detroit College of Medicine and Surgery, 1910; aged 37; died, October 4.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

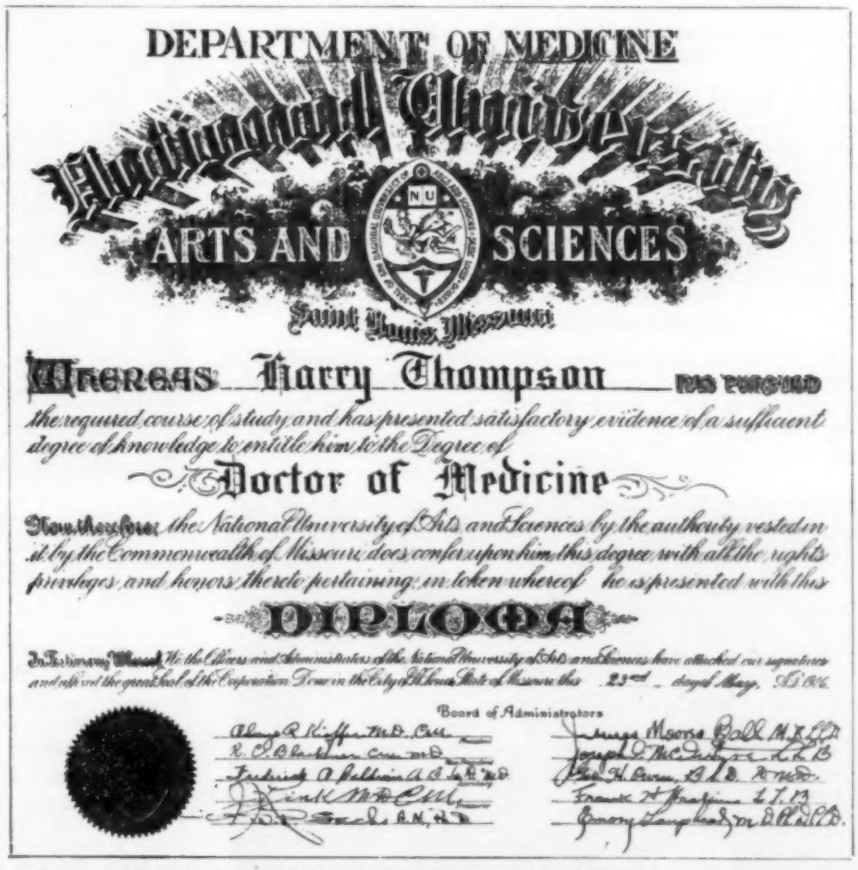
MORE DIPLOMA MILLS

The St. Louis Star Unearths a Traffic in Fraudulent Medical Diplomas, Chiropractic Diplomas and High School Certificates

Between August 6 and October 15 of the present year a reporter on the St. Louis *Star* purchased a spurious high school certificate, which, under the seal of the Department of Public Schools of Missouri set forth that he had passed an examination before Prof. W. P. Sachs on April 13, 14 and 15, 1914 (note the year), and was entitled to an official certificate from the State Superintendent of Public Instruction. During the same period of time the same young man purchased a medical diploma setting forth that the "Department of Medicine of the National University of Arts and Sciences," St. Louis, Mo., had conferred on him the degree of "Doctor of Medicine," as he had pursued the "required course of study" and had "presented satisfactory evidence of a sufficient degree of knowledge to entitle him to a degree." This diploma was dated May 23, 1916. (The institution in question went out of existence in 1918.) During the same period the *Star* man also obtained a chiropractic diploma declaring that the "Progressive College of Chiropractic, Chicago," had conferred on him the degree of "Doctor of Chiropractic" as he had "successfully completed the course of instruction as prescribed by this institution" and had "passed all examinations in the required subjects pertaining to the philosophy, art and science of chiropractic.

The investigation made by the St. Louis *Star* was carried out by a member of that paper's editorial staff, Mr. Harry Thompson Brundige, at the cost of approximately $3,000. Mr. Brundige, under his first two names, "Harry Thompson," had conferred on him the degree of "Doctor of Medicine." Of the money expended, the paper states that $1,200 went to Dr. Ralph A. Voigt of Kansas City, Mo. Other men involved in the deal are, according to the *Star*, Dr. Robert Adcox of St. Louis and Dr. D. R. Alexander, Dean of the Kansas City University of Medicine and Surgery, Kansas City, Mo. All were arrested October 15, except Sachs, who was not at home when the St. Louis paper presented to the state and federal prosecuting authorities evidence of this traffic in fraudulent diplomas and certificates.

The story of Harry Thompson Brundige, giving in detail the methods he used in obtaining, first, the fraudulent high school credits and, later, the equally fraudulent medical diploma and state license makes reading that is as interesting as it is depressing.


DEPARTMENT OF MEDICINE

ARTS AND SCIENCES

Saint Louis Missouri

WHEREAS Harry Thompson HAS PURSUED

the required course of study and has presented satisfactory evidence of a sufficient degree of knowledge to entitle him to the Degree of

Doctor of Medicine

Now Therefore the National University of Arts and Sciences by the authority vested in it by the Commonwealth of Missouri does confer upon him this degree with all the rights privileges and honors thereto pertaining; in token whereof he is presented with this

DIPLOMA

In Testimony Whereof We the Officers and Administrators of the National University of Arts and Sciences have attached our signatures and affixed the great Seal of the Corporation Done in the City of Saint Louis State of Missouri this 23rd day of May A.D. 1916

Board of Administrators

Photographic reproduction of the diploma alleged to have been sold to Harry Thompson Brundige, who posed as "Harry Thompson." It is claimed that this diploma was purchased from Dr. Ralph A. Voigt of Kansas City, Mo., in September, 1923. Note that the date of graduation is given as May 23, 1916. The National University of Arts and Sciences went out of existence in 1918.

MR. BRUNDIGE GETS HIS ASSIGNMENT

On August 6 Mr. Brundige was summoned by his managing editor and told of the existence of a medical diploma mill with which Dr. Robert Adcox of St. Louis was believed to be connected. Mr. Brundige was told to leave the *Star*, get a job as a salesman, calling on trade in and around St. Louis. Within a few hours Mr. "Thompson," obtained a job as coal salesman. He posed as a man who had recently come to St. Louis from Springfield, Mo. He rented rooms two doors west of Dr. Robert Adcox's residence and, on August 13, moved into his new lodging. While sitting on his front porch watching the letter-carrier coming up the street, he saw Dr. Adcox standing on his porch as the carrier arrived. He asked the postman if there was a doctor in the neighborhood who could treat a sore throat that he was suffering from. The mail man pointed to Adcox who was still on the porch. Thompson walked over and introduced himself and while Adcox stated that he had retired from practice, with a little urging, he was persuaded to treat Thompson and suggested that he call the day following.

On the day of his second visit, Thompson suggested that a physician had a pretty easy time of it. Adcox agreed and became more chummy. The following day, after some desultory conversation, Adcox is said to have asked Thompson how he would like to become a doctor. Thompson replied that he would like to be a doctor but that he was almost thirty years old and couldn't start school at his age and furthermore, that he hadn't even finished high school. Adcox was reported to have told him that it wasn't necessary to go to school to get a diploma and asked him how much money he had saved. Thompson replied that he had about a thousand dollars, whereupon Adcox is said to have told him that, if he was willing "to spend it to become a doctor," he was "as good as a doctor right now." He is said to have told Thompson to get ready to go to Kansas City with him the next day.

THOMPSON GOES TO KANSAS CITY

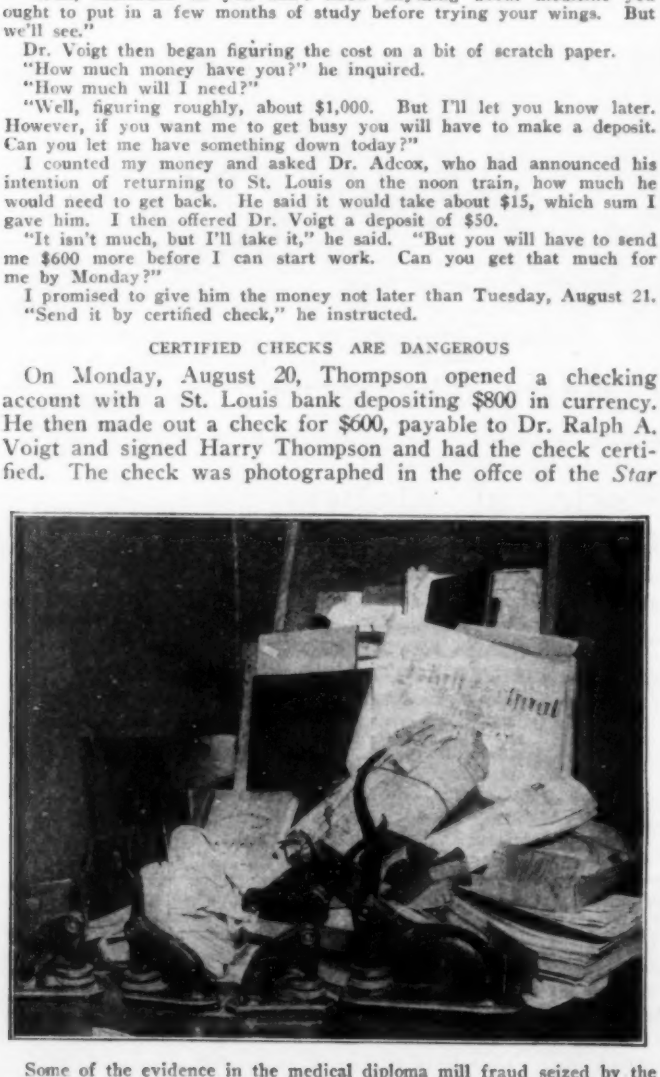
Other members of the staff of the St. Louis *Star* had been notified to "shadow" Thompson and Adcox on their Kansas City trip. When they reached Kansas City, Adcox took Thompson to the Minor Building, 309 East 10th St., where Dr. Ralph A. Voigt occupies a suite of nine rooms.

After Adcox and Voigt had been closeted alone for about an hour Thompson was called in and questioned by Voigt. But let us quote from Thompson's own story:

"So you want to be a doctor?" Voigt inquired
"That's what I came here for," I answered.
"Do you know anything about medicine?"
"Not a thing."
"Did you graduate from high school?"
"I did not."
"Well, let's see. The first thing to do is to get you a high school diploma. Then I think we'd better get you three years' credits from a medical school and let you do your senior year at Alex's."
"What do you mean by credits?"
"A certified copy of the three years work you did in a good medical school—of course you didn't really go, but the school records will be fixed to show that you did."
"What do you mean by going the senior year at Alex's?"
"I mean that Dr. D. R. Alexander, dean of the Kansas City College of Medicine and Surgery will enroll you for your senior year after we get the credits for you. Then after eight months at school you'll get your diploma and be a full fledged doctor."
"Can't I get by without going to school?"
"Well, inasmuch as you don't know anything about medicine you ought to put in a few months of study before trying your wings. But we'll see."
Dr. Voigt then began figuring the cost on a bit of scratch paper.
"How much money have you?" he inquired.
"How much will I need?"
"Well, figuring roughly, about $1,000. But I'll let you know later. However, if you want me to get busy you will have to make a deposit. Can you let me have something down today?"
I counted my money and asked Dr. Adcox, who had announced his intention of returning to St. Louis on the noon train, how much he would need to get back. He said it would take about $15, which sum I gave him. I then offered Dr. Voigt a deposit of $50.
"It isn't much, but I'll take it," he said. "But you will have to send me $600 more before I can start work. Can you get that much for me by Monday?"
I promised to give him the money not later than Tuesday, August 21.
"Send it by certified check," he instructed.

CERTIFIED CHECKS ARE DANGEROUS

On Monday, August 20, Thompson opened a checking account with a St. Louis bank depositing $800 in currency. He then made out a check for $600, payable to Dr. Ralph A. Voigt and signed Harry Thompson and had the check certified. The check was photographed in the offce of the *Star*

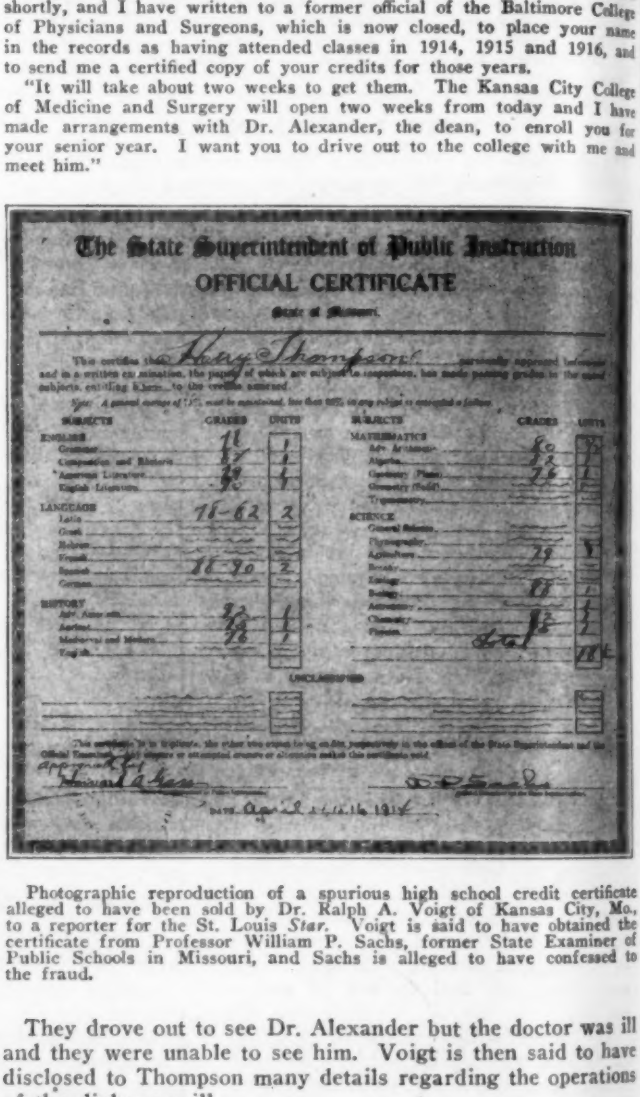


Some of the evidence in the medical diploma mill fraud seized by the authorities in a raid on the home of William P. Sachs. Three of the seals shown are of defunct colleges, one is of the Board of Education of Washington County, Mo., and one of the Department of Public Schools of Missouri. At the lower right is a stack of blank official certificates of the State Superintendent of Education attesting proficiency in high school subjects.

and Thompson went in person to Kansas City to hand it to Voigt instead of mailing it to him. Thompson arrived in Kansas City August 21, met Voigt at his office and handed in the check. Voigt is said to have protested at receiving a certified check instead of a cashier's check. To quote again:

"Why give me this kind of a check?" he demanded sharply.
"You told me to have it certified," I stated, innocently.
"I didn't mean this kind of certification—why didn't you get a cashier's draft made out to bearer. Now I've got to indorse this darned thing. I don't like it."

I apologized and offered to take the check back and get the kind he wanted, but he must have concluded that $600 in the hand was worth more than a promise for that sum, so he retained it.
"I've been very busy getting lined up for you," Dr. Voigt related. "I have taken steps to get a high school certificate, which will arrive shortly, and I have written to a former official of the Baltimore College of Physicians and Surgeons, which is now closed, to place your name in the records as having attended classes in 1914, 1915 and 1916, and to send me a certified copy of your credits for those years.
"It will take about two weeks to get them. The Kansas City College of Medicine and Surgery will open two weeks from today and I have made arrangements with Dr. Alexander, the dean, to enroll you for your senior year. I want you to drive out to the college with me and meet him."



The State Superintendent of Public Instruction

OFFICIAL CERTIFICATE

Photographic reproduction of a spurious high school credit certificate alleged to have been sold by Dr. Ralph A. Voigt of Kansas City, Mo., to a reporter for the St. Louis *Star*. Voigt is said to have obtained the certificate from Professor William P. Sachs, former State Examiner of Public Schools in Missouri, and Sachs is alleged to have confessed to the fraud.

They drove out to see Dr. Alexander but the doctor was ill and they were unable to see him. Voigt is then said to have disclosed to Thompson many details regarding the operations of the diploma mill.

After returning to St. Louis Thompson reports receiving the following cryptic letter from Dr. Voigt:

Dear Thompson: Your letter at hand and was glad to hear from you. I have not had a reply to your matter as yet, though I expect it at any time. I have taken the liberty to make a change in the arrangements and know that you will be better satisfied with my judgment. Instead of going to the east for the stock, consisting of three shares, I have gone to the west coast for completed stock, so you can have less trouble and be better off. I will send you a wire as soon as it arrives and you can get here whenever you see fit to come. Unless you are at leisure at present I would not pass up your job at this time, as it is your best time, but hold on until I notify you and I am sure you will be better off.

Thompson replied immediately as follows:

Dear Doctor: Received your letter and was surely pleased to note that you are going to get a diploma for me instead of the three years' credits. The way you wrote about stock was very clever; but I caught on at once. I can hardly wait for that telegram telling me you have everything. Don't forget the high school diploma. How will the diploma thing work out? —Will I have to go to school or will you get me the license to practice without going to school? I am very much interested and would like to know. I bought the book you told me about and am studying it religiously. Business is good and I will stick it out here until you wire me.

THREE HUNDRED DOLLARS MORE NEEDED

Thompson then relates how, on September 4, he received a telegram from Voigt reading: "Change in plan makes it necessary for 300 more. Wire it at once Western Union." Later in the day Adcox is said to have got in touch with Thompson and told him that he, too, had received a telegram

from Voigt asking him to see Thompson. The telegram to Adcox, which was signed "Ralph" read:

"Alex agrees to issue final paper on Pacific for honorable cause two fifty. Can arrange through personal friends sit in Arkansas and complete Thompson. Wire him today 300. Had no reply. Advise him Alex building addition and needs cash and ready to go at once."

Thompson said he then asked Adcox to explain this message:

"By Alex, he means Dr. Alexander of Kansas City College of Medicine and Surgery. By final paper, he means a diploma, of course. Ralph's telegram means that Dr. Alexander has agreed to give you a diploma, based on the credits obtained for you by Ralph from the college on the Pacific Coast, but that he want's $250 for doing so. Ralph means that he will go to Arkansas with the diploma and take the state medical board examinations in your name.

"He also wants me to tell you that Dr. Alexander is getting ready to build an addition to his college and needs cash. The reference to 'honorable cause' is just one of Ralph's little jokes. Do you understand, Harry, my boy? It means that you are about to have the degree of doctor of medicine conferred upon you."

STATE LICENSE IS EXTRA

After this explanation, Thompson says he asked Adcox to give him this telegram so that he might answer Dr. Voigt and that Adcox did so after clipping his name and address from the message. The day following Thompson sent $300 by Western Union telegram to Dr. Voigt. He reports that on September 11 he received a special delivery letter from Voigt stating that he had not yet received the diploma to turn over to Thompson but expected it at any time. Voigt is said to have stated further that, so far as the cost was concerned, what he had paid was all that would be necessary for the diploma, but that getting a state license would be an added expense and that he would take this up with Thompson at the next meeting.

THE "RINGER CLASS" AND THE "SUCKER MACHINE"

On September 22 Thompson received a telegram from Voigt telling him to come on to Kansas City and that the "final document" would be ready "at any time." Thompson reached Kansas City the following morning and went direct to Voigt's office. At 10 a. m. Voigt arrived. Again quoting:

"Well, doctor, I see you arrived on schedule," he [Voigt] said. "I'm looking for your diploma in every mail, haven't seen it yet. That bird in California certainly works slow, but he's certain and the stuff he puts out is A-1. Dr. Alexander has promised to issue another diploma to back up the California degree and as soon as I get them I'm going down to Arkansas to take the state board examination and get you a license. In the meantime, I think you ought to go out to Dr. Alexander's and take a few months so as to have a background for your work. You can hang out your shingle as a chiropractor or an electro specialist and use one of my offices. You can catch enough suckers to pay your expenses while you are getting a couple of months' study. I think you ought to start in out there tomorrow."

"But how can I go to school until you get the diploma proving my previous medical study?"

"Dr. Alex don't care; he'll take my word for it that I'll produce your paper in the next week or two."

I did not want to go to school and told Voigt I did not care to.

"It is too big a chance," I insisted. "The first time a professor asked me a question I'd betray my ignorance of all things pertaining to medicine."

"Why, you idiot," Voigt answered, "they won't ask you any questions; you'll be in the ringer class. The professors will put you on the list with the others who are there to listen and not to answer questions."

I then told Voigt that I would not go to school—that he had agreed to get me a diploma and a state license and to sell me a sucker machine—an electric apparatus used in "treating" sick men and women. Voigt manufactures these machines, which are patterned after the E. R. A. boxes—the "Electronic Reactions of Abrams."

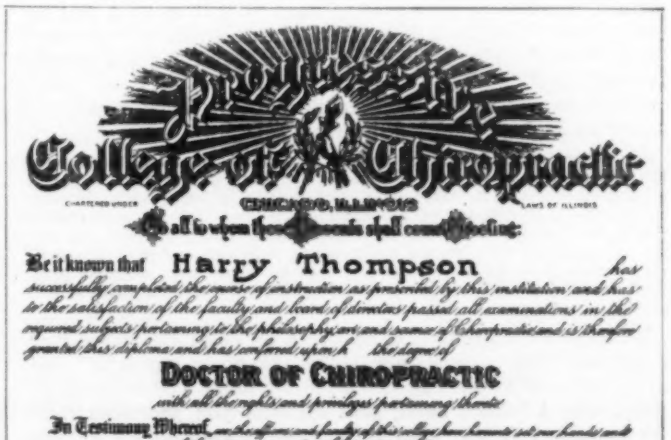
THE DIPLOMA AND LICENSE ARRIVE

Voigt is said to have declared that he didn't care whether Thompson went to school or not and that it really didn't make any difference. As the diploma still failed to materialize Thompson persistently and scientifically tried to make himself a nuisance. He succeeded and, on September 29, Voigt announced, according to the story, that if the diploma did not arrive by October 1, he, Voigt, would go to St. Louis and get it. It had not arrived on that date and Voigt went to St. Louis. On October 3, the story goes, he returned with the diploma which he gave to Thompson and he exhibited a license, issued by the State of Tennessee on which the name of Harry Thompson appeared. The name of the person to whom the license had been issued had been erased and the name "Harry Thompson" written in. It was a crude piece of work and Thompson demurred. Voigt is said to have agreed that it was a "rotten job" and to have told Thompson to go ahead and get his location and by the time he was ready to commence business he, Voigt, would have another license for him.

BECOMING A CHIROPRACTOR

While Harry Thompson was in the process of procuring a high school certificate, a medical diploma and a state license to practice medicine, he took a flier in chiropractic. To obtain fake chiropractic diplomas is less onerous and less expensive.

Thompson tells how Dr. Adcox arranged for him to take the chiropractic "course." The story runs, that, on the occasion of his first visit to the office of Dr. Ralph A. Voigt of Kansas City, Voigt suggested that he become a chiropractor, as it would enable him to "hang out a shingle and catch a lot of suckers" while he was waiting for the slower machinery of the medical diploma mill to grind out his fake credentials. Voigt is also said to have told Thompson that after he received his medical diploma he could "work the chiropractic racket along with the sucker machine" the latter being the expressive description of the "Electronic Reactions of Abrams" fakery. Thompson protested that he knew noth-



Progressive College of Chiropractic

CHICAGO, ILLINOIS

To all to whom these presents shall come, Greeting:

Be it known that Harry Thompson has successfully completed the course of instruction as presented by this institution and has to the satisfaction of the faculty and board of directors passed all examinations in the required subjects pertaining to the philosophy, art and science of Chiropractic and is therefore granted this diploma and has conferred upon him the degree of

DOCTOR OF CHIROPRACTIC

with all the rights and privileges pertaining thereto

In Testimony Whereof, we the officers and faculty of this college have hereunto set our hands and the seal this FIRST day of MARCH 1923

Henry Lindlahr M D

Photographic reproduction of a diploma purporting to be issued by the "Progressive College of Chiropractic" of Chicago, run by Henry Lindlahr and said to have been sold to a reporter for the St. Louis *Star* by Dr. Ralph A. Voigt of Kansas City, Mo.

ing about "spinal adjustments," but, apparently Dr. Voigt considered his ignorance in this direction no barrier. "You can learn all you have to know about chiropractic," Voigt is alleged to have said, "in a couple of hours." As a matter of fact, Dr. Voigt slightly underestimated the time. Actually, Harry Thompson's course of instruction in chiropractic took exactly two hours and twenty-two minutes.

Thompson says that he asked Voigt how much it was going to cost him to become a chiropractor. To quote:

"Well," Dr. Voigt answered, "I can get you fixed up with a good diploma for about $25. A friend of mine will be glad to do that for me, and inasmuch as you are going the whole route, I'll let you down easy."

"How much will the instruction cost?" I asked, turning to Dr. Adcox.

"About the same amount, I guess," he answered.

On Thompson's return to St. Louis, Adcox is said to have told him that he, Adcox, had arranged for Thompson to be instructed in chiropractic "by a deputy sheriff assigned to duty in one of the circuit courts and who practiced chiropractic on the side." Thompson demurred at taking instruction from a deputy sheriff as he was afraid that the man might possibly recognize him as a newspaper reporter. Adcox then, according to the story, called "Dr." Florence F. Baars on the telephone and this conversation is said to have onsued:

"Florence," he said, "this is Doc. Ad. I've got a friend here who wants to do chiropractics while he goes to school. No, he don't know anything about them. But I want you and Dr. Strecker to give him a course that will enable him to get by. You know, he don't care any-

thing about the origin of nerves or the intervertebral foramina or the anatomy—all he wants to know is how to give the patients their thumps and get the money. Sure he's all right. Yes, I'll send him over at 2 o'clock this afternoon."

CHIROPRACTIC IN THREE EASY LESSONS

Thompson tells how he went to "Dr." Baars' house and explained that he wanted to become a chiropractor and asked how long it would take. The woman is said to have told him three or four days and that it would cost $25. He was told to call at 7 o'clock that evening for his first lesson. At that hour Thompson states that he was introduced to F. L. Strecker and after giving Baars a check for $25, the first lesson got under way. It lasted one hour and five minutes. On leaving, Thompson was given a leaflet entitled "The Science of Chiropractic Explained" and told to memorize it so that he could discuss it impressively with patients.

He took his second lesson the following evening. This lesson lasted fifty-five minutes. Before leaving, Thompson stated that Baars supplied him (for $2.50) with a little book explaining what vertebræ to adjust for various diseases and Strecker is said to have told him that with the aid of this book he could "treat anybody for anything." Mr. Thompson's third and final "course of instruction" in chiropractic lasted exactly twenty-two minutes and the course was completed. Strecker is then said to have told Thompson that he had a book on technique which would illustrate every known "adjustment." Thompson gave him a check for $12 to pay for it.

After completing his course in chiropractic, Thompson again called on Adcox. Quoting further:

> Dr. Adcox congratulated me on my "graduation" and told me to have Dr. Voigt send along my chiropractic diploma, stating that he could get the questions to be asked by a state examining board which licenses chiropractors in advance of the examination and that he would write the answers and let me take the examination. Later, however, he told me not to bother with getting a license, as it is not needed in Missouri. He advised me to get a location and open an office and "get some practice" while awaiting word from Dr. Voigt that my medical diploma had arrived.

Thompson then tells how he wrote to Voigt informing that gentleman that he was now a "doctor of chiropractic" and would be able to put "D. C." after his name just as soon as Voigt would "shoot along that diploma you promised me." He explained further that he wished to start doing a little chiropractic stuff in St. Louis while he was waiting for the medical diploma. In reply to this letter, Thompson reports that he received word from Voigt telling him that he thought it was a mistake to start practicing as a chiropractor in St. Louis and that, as he believed he should put in a little time in Alexander's institution ("Kansas City College of Medicine and Surgery") he might just as well start chiropracting in Kansas City.

A few days later, while he was still waiting for the chiropractic diploma, Thompson reports that Strecker got in touch with him and told him that he had a good "adjusting table" which he, Thompson, could use in his chiropractic work and which Strecker would sell for $22.50. He is said to have been told further that "Dr." Baars had a spinal chart that she no longer needed and would sell for $2.50. That evening he went to the house of Baars and Strecker and purchased the table and chart. A few days later Thompson reports that he received a telegram from Dr. Voigt telling him to come to Kansas City and that upon his arrival there he learned that the chiropractic diploma was ready. To quote:

> Dr. Voigt said the diploma was out at the Kansas City College of Medicine and Surgery, and we drove out there. I saw him go into the building, saw him shake hands with Dr. D. R. Alexander, secretary, and saw Dr. Alexander hand him a paper which resembled the diploma, after it had been rolled. He returned to his automobile and handed me the diploma.
>
> "Don't unroll it," he said.
>
> We drove back downtown. As I got out of the automobile in front of my hotel, Dr. Voigt took the diploma.
>
> "Better let me keep it for you tonight," he said.
>
> I offered no objection, and he took it. The next morning he returned it. After handing it to me he gave me a notation, in his handwriting, in green ink, on stationery of the Hotel Garde of New Haven, Conn., sheets of which he had in his office. It read:
>
> "If any correspondence is necessary write to Dr. E. D. Conley personally, who will take charge. Date of graduation March 1, 1923."
>
> "I got the diploma from Conley," Dr. Voigt said, "and he'll take care of you if anybody asks any questions."

Mr. Thompson brings out in his story the fact that the total cost of the instruction, the diploma, the chart, books and the adjusting table to turn out a complete chiropractor was $89.50. As already stated, the chiropractic diploma bears the name "Progressive College of Chiropractic, Chicago, Ill." A concern of this name is one of the multitudinous activities of one Henry Lindlahr who operates, in addition, a so-called sanitarium devoted to various quasi-medical fads. Lindlahr is a graduate of the "National Medical University of Chicago," a low-grade "sundown" institution, now out of existence, and not recognized by most of the states in the Union when it was in existence. The diploma that Thompson got bore the signature of E. D. Conley, M.D., Dean; Henry Lindlahr, M.D., President; A. Wilson, Secretary, and J. E. Brady, after whose name appears the mystic letters "D.C., N.D." According to a statement from Lindlahr, published in the *Star*, all of the signatures on the diploma, except that of E. D. Conley, are "rank forgeries."

Correspondence

CONDITIONS IN THE INDIAN MEDICAL SERVICE

To the Editor:—The recent correspondence on the subject of the treatment of the American Indians prompts me to add a few personal observations that may be of interest to the profession, and aid somewhat in placing the situation in a position for betterment. Unquestionably there are two sides to the question as to the condition of the Indians under governmental care. The letters of Dr. Benson and of the Secretary of the Interior are of historical value, but those of Dr. Darey and Mr. Hoffman relate to conditions as they now are, and would seem to be of greater value in that they point to immediate needs.

An extensive experience covering a number of years with trachoma among the American Indians convinces me that, with the exception of those near the very large cities, they have failed to receive adequate attention so far as this disease is concerned.

Contrasted with the work done by the United States Public Health Service in the various rural sections among other individuals not directly under governmental care, the work of the Indian Service does not make a good showing. My most recent observations cover the Blackfeet Reservation, where, through the courtesy of the surgeons in charge, I was permitted to investigate the conditions and examine the patients. The prevalence of trachoma in this section is best expressed by the statistics supplied me by the surgeons in charge, although there was no difficulty in verifying these figures by personal observation. Its incidence would seem to be greater than that indicated by the figures given.

Thus, in the settlement north of Two-Medicine River, out of 517 persons there were 154 cases, or 30 per cent., while in the settlement south of Two-Medicine River, out of 441 persons, there were 105 cases, or 23 per cent. In the Holy Family Mission School, out of 95 children, there were 38 cases, or 40 per cent., while at Cutbank Boarding School 54 cases were found out of 115 persons examined, or 47 per cent. Now, any way the situation is viewed, the existence of 351 cases of trachoma out of a group of 1,168 persons is an occasion for alarm. Should the *Leviathan* come into the port of New York with 351 cases of trachoma, the various health authorities would begin to show considerable industry in eradicating it rather than give an historical review of their manifold activities dating back to 1888.

While my observations cover a limited area, and necessarily do not serve as an indictment for the entire service, the very fact of its being limited geographically reflects on the

efficiency of the department in not having availed itself of the advantages of these limitations to eradicate the conditions that exist. It therefore arouses the speculation that it is no more or no less efficient in the other reservations. It would seem that the health matters pertaining to the several governmental activities should be standardized, and if possible placed under one administration, perhaps the Public Health Service. There is no good reason why the Indians should be permitted to go blind in the presence of known methods of prevention. Here in this settlement there were already twenty-nine blind in one eye, eight blind in both eyes, and nine practically blind. Surely our pride in our past accomplishments gives these poor creatures very little consolation. No matter what the department has done in the past, it is not sufficient for the present. If nothing short of reorganization and greater appropriations will bring about a betterment, then it is time Congress was aroused to the necessary means. Certain it is that satisfaction with the present method of handling of the conditions will not remove the menace of the disease. There is no doubt, as Dr. Benson states, that under the present conditions the surgeons in the Indian Service must be imbued with the missionary spirit; but the advisability of relying on chance to bring such individuals to work in the service is questionable. The work will be well done only when the remuneration is sufficient to place the service on the same plane as other medical agencies. In a service in which the return is inadequate, it is always difficult to maintain discipline. This criticism is made with a view to obtaining speed in the reorganization of the Indian Service and not to hamper it by fault-finding; but the opportunity to suggest omitting the "history" in correcting the errors of the service cannot be ignored. The possibilities of 351 active cases of trachoma are appalling, and justify endless discussion.

L. WEBSTER FOX, M.D., Philadelphia.

"FRACTURES OF THE NECK OF THE FEMUR"

To the Editor:—The paper by Dr. Campbell in THE JOURNAL, October 20, is a most important contribution to the propaganda for reform, of which the first essential is an absolute repudiation of the traditional teaching still supported by many of the textbooks, namely, that fracture of the neck of the femur is an exception to all the injuries of its class, in that its effective treatment as a fracture is both dangerous and futile.

The purpose of this letter is, however, to call attention to what in the author's mind is evidently a minor point. He states that in the treatment of intracapsular fracture the abduction method "as described by Whitman has been employed as a routine . . . with addition, recently, of artificial impaction as advocated by Cotton, which is regulated by a series of roentgenograms on the operating table."

It may be recalled that Dr. Cotton based his operation on the statement that an intracapsular fracture never united unless it was impacted; consequently, that artificial impaction offered the only hope of repair. According to Dr. Cotton's directions, the fragments having been apposed, the trochanter was "malleted until something gave," indicating apparently penetration. A plaster spica was then applied to protect the impaction.

It has long since been demonstrated that intracapsular fractures unite in the majority of cases if apposition and fixation are assured, and Dr. Campbell's recent results can scarcely be better than those he reported in the *Annals of Surgery* in 1919. It is evident also that artificial impaction in his hands is simply an adjunct to the abduction treatment; but he leaves one in doubt as to the manner in which it is applied and as to its actual effects.

If, as one might assume, he mallets the trochanter until "something gives," does he think that in a subcapital fracture the fragile neck penetrates the compact substance of the head, or, in a central fracture, that two cylinders of equal area may be forced into each other? Is it not probable that in this instance the less resistant posterior wall will give way, with consequent lateral distortion and separation of the cancellous structure on which repair depends? And, in any event, would not crushing violence lessen the nutrition and favor subsequent absorption of tissue, formerly supposed to be an inevitable sequence of this injury?

Dr. Campbell is aware that the mechanism of the abduction method is most effective in fresh fractures, when the neck is of normal length, so that capsular tension may aline the fragments and force them into a resistant contact. If one were then to mallet the trochanter until "something gave," would not the neck be shortened, either by crushing or by distortion, and thus lessen the security already attained?

Roentgenograms taken on the operating table and afterward through the plaster spica are of value as demonstrating the attainment and maintenance of the opportunity for functional repair assured by the fixation of the fragments in normal relation, and what more, it may be asked, could be shown after artificial impaction except a shortened neck?

I have had no experience with artificial impaction in any form; but, from a theoretical standpoint, I conclude that as an adjunct to the abduction treatment its value is in proportion to its physical ineffectiveness. From this standpoint it is objectionable because it adds a speculative element to a definite, effective and demonstrable application of surgical principles.

ROYAL WHITMAN, M.D., New York.

"THE STATUS OF BLOOD TRANSFUSION"

To the Editor:—In an editorial on the status of blood transfusion (THE JOURNAL, September 29, p. 1114), discussing the citrate method of blood transfusion, it is stated that "the added chemical also develops anticomplementary properties in the plasma, and reduces the phagocytic and opsonic powers of the blood. These facts would naturally argue against the use of the citrate method in the general infections when a resistance action is sought. The corpuscles are said to become more friable—a result particularly undesirable in combating certain forms of anemia."

These statements as to the action of sodium citrate on the blood are based on a paper by Unger (The Deleterious Effect of Sodium Citrate Employed in Blood Transfusion, THE JOURNAL, Dec. 31, 1921, p. 2107).

In order to correct the erroneous impression created by the editorial, as if this deleterious action of sodium citrate on the various constituents of the blood were a fact, I will quote the following paragraphs from my recent paper (Chills Following Transfusion of Blood, THE JOURNAL, 1923, p. 247) in which I discuss Unger's experiments:

> It was clear, without further experiments, that Unger's conclusions concerning the inhibitory action of sodium citrate on the leukocytes were erroneous; for in the Wright opsonic index determination, in which the phagocytic activity of the leukocytes is to be measured, leukocytes are collected in from 1.5 to 2 per cent. sodium citrate solution. This is ten times as strong as the percentage of sodium citrate used in transfusion.
>
> The other two points claimed by Unger have been disproved by the recent work of Mellon, Hastings and Casey (Observations on the Effect of Sodium Citrate on the Blood, THE JOURNAL, Nov. 11, 1922, p. 1678). They state that the results of their experiments are, in the main, "diametrically opposed to those of Unger." They found no anticomplementary power in citrated plasma, and no deleterious effect either on the red or on the white blood cells.

RICHARD LEWISOHN, M.D., New York.

Club for the Blind.—A club for the blind has recently been established in Budapest, Hungary, containing a library of more than 2,000 works. There are also billiard rooms and chess rooms.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

IMMUNITY IN TYPHOID FEVER

To the Editor:—A well known author has made the statement in his latest book that the person who has had a case of typhoid fever is immune from that disease thereafter. He also makes the statement that there is no such thing as walking typhoid fever. I wish you would give me your opinion as to whether he has any backing for making such statements, and whether or not the finding of a positive Widal reaction, in the very light cases, would mean that they had typhoid infection instead of what he says is paratyphoid. I am well aware that typhoid fever is getting to be rather a rare disease, especially in this part of the country, but I practiced several years in Texas where at that time it was very common. The immunity which he mentions did not seem to exist there. I do not want you to think that I confused typhoid with malaria, although we had both to a great extent.

————, M.D., Kansas.

ANSWER.—The bald statement that a person who has had typhoid fever is immune to typhoid fever thereafter is not in harmony with clinical experience. There is no doubt that more than one attack of typhoid fever may occur in the same person; but this is an unusual occurrence, and the general statement that one attack leaves behind it immunity holds true in most cases. It ought to be borne in mind that immunity is probably never wholly absolute; there is no anti-infectious immunity so strong that persons once susceptible to a given infection may not succumb again to overwhelming doses of infectious material or suffer depressions of resistance.

So-called walking cases of typhoid fever have been observed to occur under conditions that leave no doubt as to the possibility that persons may walk about with typical, full fledged typhoid fever. Such persons have died suddenly from hemorrhage or other complications, and the postmortem examination by competent authorities has revealed well developed, typical intestinal and other lesions characteristic of typhoid fever.

Whether a positive reaction of agglutination in a given case is due to infection with typhoid or paratyphoid bacilli must be determined by appropriate special tests with each of these bacilli. On account of the relations of the members of the typhoid-paratyphoid group of bacilli, so-called group reaction or agglutination may occur that may be misleading unless special precautions are used.

GONORRHEAL ORCHIEPIDIDYMITIS

To the Editor:—1. Does gonorrheal orchiepididymitis always produce sterility? 2. Is orchiepididymitis caused by imperviousness (obstruction) of the epididymis or by atrophy of the testis? 3. Is there some method for obtaining the reappearance of spermatozoa in the semen of those that have been affected with orchiepididymitis?

M.D., Mexico.

ANSWER.—1. In the United States, gonorrheal orchiepididymitis is unusual, the infection being commonly limited to the epididymis. In the Canal Zone, extension to the testis, orchiepididymitis, seems frequent, according to U. S. hospital reports from that region; probably this is true in other warm regions also. Orchiepididymitis does not always produce sterility.

2. When sterility is produced, this may be due either to occlusion of the genital duct (epididymis or vas), or to atrophy of the testis, or to both. The remedial procedure, effective in a minority of cases, is this: Through an incision 2 cm. long through the skin of the outer side of the scrotum just above the epididymis, the vas deferens and the globus major are exposed. The wall of the latter is picked up by toothed forceps and incised; a milky fluid, containing spermatozoa, should escape. If this fluid contains no spermatozoa, the operation is abandoned. If sperms are found, a short incision is made into the lumen of the vas, through which 5 c.c. of methylene blue solution (1:20,000) is gently injected toward the body. If the urine passed immediately thereafter is blue, the patency of the vas is established. The edges of the incision in the globus major and in the vas are then united by fine silk sutures, and the skin wound closed. Details of this procedure, Martin's operation, are found in all modern textbooks on urology.

3. Restoration of the sperm-producing function of the testis has not been achieved by medication or other treatment.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARKANSAS: Little Rock, November 13-14. Sec., Dr. J. W. Walker, Fayetteville.

CONNECTICUT: Hartford, November 13-14. Sec., Reg. Bd., Dr. Robert L. Rowley, 79 Elm St., Hartford.

CONNECTICUT: New Haven, November 13-14. Sec. Eclec. Bd., Dr. James E. Hair, 730 State St., Bridgeport.

CONNECTICUT: New Haven, November 13. Sec., Homeo. Bd., Dr. E. C. M. Hall, 82 Grand Ave., New Haven.

LOUISIANA: New Orleans, December 13-15. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans.

MAINE: Portland, November 13-14. Sec., Dr. Adam P. Leighton, Jr., 192 State Street, Portland.

NEBRASKA: Lincoln, November 6-8. Supt., J. D. Case, Lincoln.

NEVADA: Carson City, November 5. Sec., Dr. Simeon L. Lee, Carson City.

NORTH CAROLINA: Chapel Hill, December 4. Sec., Dr. Kemp P. B. Bonner, Raleigh.

TEXAS: Dallas, November 20-22. Sec., Dr. T. J. Crowe, Dallas County Bank Bldg., Dallas.

VIRGINIA: Richmond, December 11-14. Sec., Dr. J. W. Preston, McBain Bldg., Roanoke.

REPORT OF THE SIXTEENTH EXAMINATION OF THE NATIONAL BOARD OF MEDICAL EXAMINERS

The sixteenth examination of the National Board of Medical Examiners was held in thirty-six Class A medical schools, and three training camps of the U. S. Army, June 25, 26 and 27, 1923, in Part I, which comprises written examinations in each of the six fundamental medical sciences. The subjects of the examination and the relative value of each were: anatomy, 100; physiology, 75; materia medica and pharmacology, 75; pathology, 75; physiologic chemistry, 50, and bacteriology, 50, making a total of 425 counts for this part.

Part I

A candidate taking Part I must earn at least 75 per cent. of this total. The number of counts earned in any subject depends directly on the ratings of the answered papers. Falling below 65 per cent. in two subjects, or below 50 in one subject, constitutes a failure.

A candidate is allowed to take an incomplete examination, omitting one of the subjects if the instruction in this subject is not completed in the medical school of attendance by the end of the second year. Two Hundred and fifty-one appeared for examination in Part I; of these, 164 passed, forty-six failed, and forty-one took an incomplete examination.

PASSED, PART I

Names and Medical Schools	Year of Grad.
Ammarell, John Samuel, Univ. of Pennsylvania Medical School	1922
Anderson, Ernest Raymond, Rush Medical College	1924
Anderson, Samuel A., Johns Hopkins Medical School	1923
Armstrong, John Wilbur, University of Vermont Medical School	1924
Baron, Sadi Muriel, Woman's Medical College	1924
Baty, James Marvin, Harvard Medical School	1925
Bemis, George Gordon, Harvard Medical School	1922
Bird, Clare Edward, Harvard Medical School	1923
Bogen, Emil, University of Cincinnati School of Medicine	1923
Bond, Robert Emerson, University of Illinois College of Medicine	1925
Bothe, Albert Edward, Long Island College of Medicine	1919
Brown, Howard Bryden, Dartmouth Medical College	1925
Buckman, Lewis Taylor, Univ. of Pennsylvania Medical School	1922
Burisch, John Livingston, Harvard Medical School	1923
Burroughs, Travis Pollard, Harvard Medical School	1925
Calhoun, Abner W., Harvard Medical School	1923
Cantarow, Abraham, Jefferson Medical College	1924
Capper, Aaron, Jefferson Medical College	1924
Cates, Samuel Clark, University of Pennsylvania Medical School	1924
Cattanach, Lachlan McA., Johns Hopkins Medical School	1925
Coburn, Alvin F., Johns Hopkins Medical School	1925
Coburn, John Wesley, Yale Medical School	1925
Cloud, Albert Williams, Harvard Medical School	1925
Cone, William Vernon, University of Iowa College of Medicine	1922
Cooper, Linn Fenimore, Harvard Medical School	1925
Crowell, Caroline, University of Pennsylvania Medical School	1925
Crump, Jean, Woman's Medical College	1923
Daniels, Francis Raphael, University of Buffalo Medical College	1924
Daniels, George Eaton, Harvard Medical School	1923
Delaney, George Anthony, Creighton University Medical College	1925
Dolan, Bernard James, University of Buffalo Medical College	1924
Dolan, James Edward, University of Buffalo Medical College	1924
Dudley, Leon Herbert Martin, Syracuse Univ. School of Medicine	1925
Duff, Ella Ishbel, Woman's Medical College	1923
Dunn, Laurence B., Harvard Medical School	1925
Easby, Mary Hoskins, Woman's Medical College	1924
Eisaman, Josiah Reamer, Jr., Harvard Medical School	1921
Evarts, Helen W., Johns Hopkins Medical School	1922

Ferris, Henry Whiting, Yale Medical School....1925
Finger, Louis, University of Buffalo Medical College....1924
Fisher, Robbin E., University of Oregon Medical School....1925
Fomon, Samuel, University of Illinois College of Medicine....1906
Forster, Walter Livingstone, Univ. of North Dakota Med. School....1925
Frederickson, Clyde Harold, Univ. of Minnesota Medical School....1924
Fry, Selvia Oscar, University of Cincinnati Medical School....1922
George, William Wellington, Georgetown Univ. School of Medicine....1921
Gilliland, Mary Leata, Rush Medical College....1925
Glassberg, Bertrand Y., Washington University School of Medicine....1925
Goldberg, Hyman Bernard, Tufts Medical College....1925
Goode, John Vivian, Johns Hopkins Medical School....1925
Gregg, Ralph, Harvard Medical School....1925
Griswold, Rettig Arnold, Univ. of Louisville Medical Department....1925
Guild, Harriet Griggs, Johns Hopkins Medical School....1925
Hackman, Pearl Estella, Woman's Medical College....1924
Harvey, Harold D., College of Physicians and Surgeons, Columbia....1925
Henry, Ralph Howard, University of Pennsylvania Medical School....1924
Higbee, Daniel Riggs, Harvard Medical School....1923
Howard, Nelson Jacob, Johns Hopkins Medical School....1925
Hulka, Jaroslav H., University of Prague....1917
Hulsey, Simeon Hardin, University of Texas Medical School....1925
Inches, Charles Patrick, Harvard Medical School....1923
Jarvis, Beryl Winston, Syracuse University School of Medicine....1925
Johnson, Harold Edward, Rush Medical College....1922
Johnson, Norman Percy, Harvard Medical School....1923
Kappes, Louise Osborn, University of Michigan Medical School....1924
Kellogg, John Francis, Jr., Harvard Medical School....1925
Kelly, Edmund Joseph, Jr., Creighton University Medical College....1925
Kestel, John L., Ceighton University Medical College....1924
Klopp, John William, University of Pennsylvania Medical School....1925
Knight, Floyd LaFayette, Univ. of Virginia, Dept. of Medicine....1924
Knott, James I., Washington University School of Medicine....1925
Knowlton, Isabel, Tufts Medical College....1924
Kretzler, Harry Hamlin, University of Nebraska Medical School....1923
Kyle, Ernest Ide, Harvard Medical School....1925
Lawrence, John Vincent, Rush Medical College....1921
Lawson, Theodore Carey, Harvard Medical School....1923
Lewis, James Poland, University of Pennsylvania Medical School....1924
Linton, James Reginald, Harvard Medical School....1925
Linton, Robert R., Harvard Medical School....1925
Lukens, Francis D. W., Univ. of Pennsylvania Medical School....1925
Lyon, Julian Milton, Harvard Medical School....1923
MacCormack, Donald M., Univ. of Illinois College of Medicine....1925
Macdonald, Carolyn, Rush Medical School....1924
Macdonald, Maxwell Eugene, Harvard Medical School....1921
McClure, William Lionel, Harvard Medical School....1923
McHenry, Lawrence Chester, Harvard Medical School....1925
McLaughlin, Juanita Shaffner, Woman's Medical College....1923
McLean, Arthur John, Johns Hopkins Medical School....1925
Mahorney, Howard Raymond, Univ. of Pennsylvania Med. School....1925
Meals, Robert Woodruff, Univ. of Illinois College of Medicine....1924
Mehring, Percy Leroy, Univ. of Pennsylvania Medical School....1923
Miles, George Stanley, Harvard Medical School....1923
Miller, Ralph Kennedy, Harvard Medical School....1925
Milliken, Neil, Harvard Medical School....1924
Mora, Jacob Morton, University of Illinois College of Medicine....1924
Moore, Thomas Benjamin, Univ. of Minnesota Medical School....1924
Moyer, John Sanford, University of Pittsburgh Medical School....1921
Muendel, Edward August, Univ. of Pennsylvania Medical School....1923
Nemours, Paul Roland, Washington Univ. School of Medicine....1925
Norton, Richard Copeland, Yale Medical School....1925
Norwood, Vernon Hyatt, Johns Hopkins Medical School....1925
Obuchowski, Henry Thomas, Tufts Medical College....1925
Owen, Thelma Viola, Woman's Medical College....1924
Palmer, Robert S., Harvard Medical School....1925
Parks, Floyd Roswell, Harvard Medical School....1925
Pearse, Herman Elwyn, Jr., Harvard Medical School....1925
Peirson, Edward Lawrence, Jr., Harvard Medical School....1925
Perkins, Arthur, Harvard Medical School....1923
Pernokis, Evans William, Harvard Medical School....1923
Peterson, Evan Adolph, Rush Medical College....1924
Phillips, Kenneth, Rush Medical College....1925
Pike, Maurice Mitchell, Harvard Medical School....1925
Polk, Florence, University of Pennsylvania Medical School....1924
Potts, Willis John, Rush Medical College....1923
Powis, Ethel M., University of Pennsylvania Medical School....1924
Pugh, Herbert Lamont, Univ. of Virginia Dept. of Medicine....1923
Quaintance, Paul A., Rush Medical College....1923
Rayner, John George, Harvard Medical School....1925
Reed, Faith Wilson, Woman's Medical College....1924
Reitsma, Helen Webb, Johns Hopkins Medical School....1925
Reynolds, Edwin Drew, Harvard Medical School....1923
Reynolds, Gardner Shaw, Univ. of Minnesota Medical School....1924
Rha, Leander William, Univ. of North Dakota Medical School....1924
Risch, David McKenzie, Johns Hopkins Medical School....1924
Roberts, Sumner Mead, Harvard Medical School....1925
Rogers, Robert Page, Harvard Medical School....1925
Rosenblatt, Millard S., Harvard Medical School....1925
Rothman, Philip, Johns Hopkins Medical School....1925
Sa'di, Lufti M., University of Beirut....1920
Salinger, Robert, Johns Hopkins Medical School....1925
Salladay, Isaiah Reed, Rush Medical College....1925
Schneck, Robert Jacob, Harvard Medical School....1925
Shapiro, Sherman L., University of Illinois College of Medicine....1924
Sharp, Ezra Abraham, Johns Hopkins Medical School....1925
Shinsbery, Lawrence, Jefferson Medical College....1924
Simmons, James Greenleaf, Harvard Medical School....1923
Simpson, Miriam Elizabeth, Johns Hopkins Medical School....1922
Smejkal, Frank J., University of Illinois College of Medicine....1924
Sophian, Lawrence Henry, Harvard Medical School....1925
Souther, Susan Page, Johns Hopkins Medical School....1922
Spittler, Feliz A., Creighton University Medical School....1924
Strange, James McLaren, Harvard Medical School....1925
Strozy, Herbert E., University of Nebraska Medical School....1923
Temkin, Judith, Woman's Medical College....1924
Thelander, Huldah E., University of Minnesota Medical School....1924
Thompson, Frederick G., Harvard Medical School....1923
Thompson, Gersham J., Washington Univ. School of Medicine....1925
Tiede, Joseph W., Harvard Medical School....1925
Tiffany, Mary Neosholeta, Rush Medical College....1922
Vanderburgh, Alexander, N. Y. and Bellevue Univ. Med. School....1923
Vaughan, Arkell M., Rush Medical College....1925
Vories, Ruth E., University of Colorado Medical School....1924
Waddell, Kenneth C., Albany Medical College....1925
Waltz, Roswell S., University of Oregon Medical School....1925
Wargensteen, Owen Harding, University of Minnesota....1922
Warren, Charles William, Syracuse University Medical School....1924
White, Gilbert William, Univ. of Pennsylvania Medical School....1924
Whiting, Walter B., Harvard Medical School....1923
Whittier, Alice A. S., Yale Medical School....1925
Wilkinson, Arthur Paul, Johns Hopkins Medical School....1923
Wishard, William Miles, Jr., Harvard Medical School....1924
Wolff, Harold George, Harvard Medical School....1923
Wonders, Max Eugene, University of Nebraska Medical School....1924
Worob, Sarah E., Woman's Medical College....1924

FAILED

University of Buffalo Medical School....1924, 1
University of Colorado Medical School....1924, 1
University of Columbia College of Physicians and Surgeons....1925, 1
Dartmouth Medical School....1925, 6
Hahnemann Medical College....1924, 1
Harvard Medical School....1923, 2
University of Indiana School of Medicine....1925, 2
Johns Hopkins Medical School....1922, 1; 1925, 3; total, 4
University of Louisville Medical School....1925, 2
University of Nebraska Medical School....1924, 1
University of North Dakota Medical School....1925, 1
University of Oklahoma School of Medicine....1925, 1
University of Oregon Medical School....1922, 1
University of Pennsylvania Medical School....1922, 1
Rush Medical College....1918, 1; 1923, 1; 1924, 1; 1925, 1; total, 4
Syracuse University School of Medicine....1925, 5
Tufts Medical College....1923, 1; 1925, 2; total, 3
Tulane University School of Medicine....1925, 1
Woman's Medical College....1921, 1
Yale Medical School....1924, 1; 1925, 3; total, 4

Part II

Part II of the examination was held in thirty of the medical schools mentioned above, June 28 and 29, 1923. This was also a written examination in the following subjects and with the relative values assigned: medicine, 75; surgery, 75; obstetrics and gynecology, 50, and public health, 25, making a total of 225 counts for this part.

A candidate taking Part II must earn at least 75 per cent. of this total. The number of counts earned in any subject depends directly on the rating of the answered papers. Falling below 65 per cent. in two subjects, or below 50 in one subject, constitutes a failure.

One hundred and twelve candidates appeared for examination in Part II. Of these, ninety-nine passed, twelve failed and one took an incomplete examination.

PASSED, PART II

Names and Medical Schools	Year of Grad.
Alyea, Edwin Pascal, Johns Hopkins Medical School	1923
Anderson, Samuel A., Johns Hopkins Medical School	1923
Askey, John Martin, University of Pennsylvania Medical School	1923
Bemis, George Gorden, Harvard Medical School	1922
Bercovitz, Zacharias, Rush Medical College	1923
Bird, Clare Edward, Harvard Medical School	1923
Bogen, Emil, University of Cincinnati School of Medicine	1923
Bortz, Edward Leroy, Harvard Medical School	1923
Bronson, Margaret Lathrope, Johns Hopkins Medical School	1922
Burisch, John Livingston, Harvard Medical School	1923
Cadman, Robert B., University of Pennsylvania Medical School	1923
Calhoun, Abner W., Harvard Medical School	1923
Chadman, M. Gregory, University of Pennsylvania Medical School	1921
Chambers, Silas Eldrige, University of Virginia Medical Dept.	1923
Chandlee, Gertrude Jackson, Tufts Medical College	1921
Cheney, Garnett, Harvard Medical School	1922
Closson, Esther Marjorie, Woman's Medical College	1923
Coppock, Orion Otto, Emory University School of Medicine	1923
Cummings, Clarence W., Univ. of Pennsylvania Medical School	1923
Curtis, Lawrence, Univ. of Pennsylvania Medical School	1923
Dustin, Cecil Calvert, Harvard Medical School	1923
Eisaman, Josiah Reamer, Jr., Harvard Medical School	1921
Evarts, Helen W., Johns Hopkins Medical School	1922
Farra, Ann Elizabeth, Woman's Medical College	1923
Faulkner, Robert Lee, Johns Hopkins Medical School	1923
Fitz-hugh, Thomas, Jr., Univ. of Pensylvania Medical School	1920
Flothow, Paul George, Univ. of Pennsylvania Medical School	1923
Fomon, Samuel, University of Illinois College of Medicine	1906
Ford, Henry G., Vanderbilt University College of Medicine	1923
Frank, Ruth Jean, Woman's Medical College	1923
Fry, Selvia Oscar, University of Cincinnati Medical School	1922
George, William Wellington, Georgetown Univ. School of Medicine	1921
Goforth, John Lawrence, Johns Hopkins Medical School	1923
Greisheimer, Esther Maud, Tufts Medical College	1922
Grogan, Roy Lee, Rush Medical College	1923
Harris, Stanley Edwards, Univ. of Pennsylvania Medical School	1923
Harvey, John, Jr., Univ. of Pennsylvania Medical School	1920
Heberling, John Atherton, Univ. of Pennsylvania Medical School	1923
Herrman, Albert E., Harvard Medical School	1923
Higbee, Daniel Riggs, Harvard Medical School	1923
Hulka, Jaroslav H., University of Prague	1917
Inches, Charles Patrick, Harvard Medical School	1923
Johnson, Norman Percy, Harvard Medical School	1923
Keeler, Harold Raudenbush, Univ. of Pennsylvania Med. School	1921
Kilborne, Norman Joseph, Rush Medical College	1923
Kretzler, Harry Hamlin, University of Nebraska Medical School	1923
Lawson, Theodore Carey, Harvard Medical School	1923
Lyon, Julian Milton, Harvard Medical School	1923
McClellan, Walter Stuart, Harvard Medical School	1923
McClure, William Lionel, Harvard Medical School	1923
Macdonald, Maxwell Eugene, Harvard Medical School	1921
McKay, Robert Witherspoon, Johns Hopkins Medical School	1923
Macnaughton, Elizabeth, Cornell Medical School	1922
Magee, Russell Stuart, Hahnemann Medical College	1922

Manning, Helen Marion, Woman's Medical College....1922
Mehring, Percy Leroy, Univ. of Pennsylvania Medical School....1923
Meredith, Evert Waitman, Johns Hopkins Medical School....1923
Merselis, John Gaston, Johns Hopkins Medical School....1923
Miles, George Stanley, Harvard Medical School....1923
Moyer, John Sanford, University of Pittsburgh Medical School....1921
Muncie, James Ernest, Vanderbilt Univ. School of Medicine....1923
Mutschmann, Paul Nathaniel, Univ. of Iowa College of Medicine..1922
Nelson, Esther Serida, Rush Medical School....1923
Neuswanger, Chris Harold, Harvard Medical School....1923
Ohlson, Albine Victor, Univ. of Pennsylvania Medical School....1922
Parker, Herman Richard, Syracuse University School of Medicine..1923
Perkins, Arthur, Harvard Medical School....1923
Pernokis, Evans William, Harvard Medical School....1923
Potts, Willis John, Rush Medical College....1923
Pugh, Herbert Lamont, University of Virginia Medical Dept....1923
Rambo, Victor, Univ. of Pennsylvania MedicalSchool....1921
Reynolds, Edward Drew, Harvard Medical School....1923
Richardson, Wyman, Harvard Medical School....1923
Riley, Cathryn V., Johns Hopkins Medical School....1922
Rykken, Felix Christian, Univ. of Pennsylvania Medical School....1922
Sa'di, Lufti M., University of Beirut....1920
Sanders, Miller Abram, Univ. of Pennsylvania Hedical School....1923
Schauffler, Goodrich Capen, Harvard Medical School....1923
Schrack, Helen Frances, Woman's Medical College....1923
Shippey, Stuart Hunter, Emory University School of Medicine....1923
Simmons, James Greenleaf, Harvard Medical School....1923
Simpson, Miriam Elizabeth, Johns Hopkins Medical School....1922
Souther, Susan Page, Johns Hopkins Medical School....1922
Spangler, Paul E., Harvard Medical School....1923
Straub, Elmer Levi, Univ. of Pennsylvania Medical School....1922
Thiery, Raymond Donle, Harvard Medical School....1923
Thomas, Jessie Elisa, Univ. of Pennsylvania Medical School....1923
Thompson, Frederick G., Harvard Medical School....1923
Tiffany, Mary Neosholeta, Rush Medical College....1922
Vanderburgh, Alexander, N. Y. and Bellevue Univ. Med. School...1922
Van Dyck, Laird Sumner, Rush Medical College....1923
Wakeman, Alfred Maurice, Yale Medical School....1922
Walker, Arthur Meeker, Harvard Medical School....1923
Warren, Shields, Harvard Medical School....1923
Whiting, Walter B., Harvard Medical School....1923
Winter, Anna Ruth, Woman's Medical College....1923
Witherow, Lester Stuart, Univ. of Pennsylvania Medical School...1923
Wolff, Harold George, Harvard Medical School....1923
Wright, Arthur William, Harvard Medical School....1923

FAILED

Johns Hopkins Medical School....1923, 1
Harvard Medical School....1923, 1
Rush Medical College....1918, 1
University of Michigan Medical School....1923, 1
University of Pennsylvania Medical School....1923, 1
St. Louis University School of Medicine....1923, 1
Vanderbilt University School of Medicine....1923, 1
Washington University School of Medicine....1922, 1; 1923, 1; total, 2
Woman's Medical College....1923, 3

North Carolina June Examination

Dr. Kemp P. B. Bonner, secretary of the North Carolina Board of Medical Examiners, reports the oral and written examination, held at Raleigh, June 25-29, 1923. The examination covered 16 subjects and included 70 questions. An average of 80 per cent. was required to pass. Of the 70 candidates examined, 65 passed and 5 failed. Twenty-six candidates were licensed by reciprocity and 2 candidates were licensed by endorsement. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
George Washington University		(1923)	86
Atlanta Medical College		(1914)	81
Emory University School of Medicine		(1923, 2)	84, 85
Northwestern University Medical School		(1922)	87
Tulane University		(1922) 80, (1923, 5) 81, 84, 86,	86, 90
Johns Hopkins University Medical Dept.		(1918) 87, (1921)	85
Univ. of Maryland		(1921) 88, (1923, 7) 83, 85, 85, 86, 86,	89, 90
North Carolina Medical College		(1912)	80
Jefferson Medical College		(1922) 86, (1923, 16) 82, 83, 83, 84, 86, 86, 86, 86, 87, 87, 88, 90, 91, 91	84, 84,
University of Pennsylvania		(1921) 91, (1923, 12) 81, 83, 83, 88, 89, 90, 90, 91, 91, 94	87, 88,
Medical College of the State of South Carolina		(1922)	87
Meharry Medical College		(1918) 81, (1923)	80
Medical College of Virginia		(1922) 81, (1923, 7) 83, 83, 86, 89, 89, 90	88,
University of Virginia		(1923, 2)	90, 90

College	FAILED	Year Grad.	Per Cent.
Howard University School of Medicine		(1920)	72.5
Emory University School of Medicine		(1921) 63.8, (1922)	75.8
Tulane University		(1921)	76.4
Jefferson Medical College		(1922)	77

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Alabama		(1912, 2)	Alabama
University of Arkansas		(1918)	W. Virginia
Atlanta College of Physicians and Surgeons		(1912)	Georgia
Atlanta Medical College		(1916, 2)	Georgia
University of Georgia Medical Department		(1911)	Georgia
American Medical Missionary College		(1904)	Ohio
Chicago College of Medicine and Surgery		(1917)	Illinois
Baltimore Medical College		(1906)	Mass.
Johns Hopkins University Medical Department		(1913)	Virginia
Maryland Medical College		(1906)	S. Carolina
University of Maryland		(1384) Georgia, (1919)	Virginia
Leonard Medical School		(1911)	Tennessee
Bellevue Hospital Medical College		(1897)	S. Carolina
Cleveland Homeopathic Medical College		(1901)	Florida
Cleveland-Pulte Medical College		(1913)	Ohio
Med. Coll. of the State of S. Carolina		(1905), (1915), 1916)	S. Carolina
Meharry Medical College		(1916)	Georgia
Memphis Hospital Medical College		(1906)	Tennessee
Tennessee Medical College		(1908)	Tennessee
University of Tennessee		(1921)	Tennessee
Medical College of Virginia		(1917)	Virginia

College	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement with
Tulane University		(1905)	U.S.P.H.S.
Jefferson Medical College of Philadelphia		(1918)	U. S. Navy

Social Medicine and Medical Economics

MEDICAL SCHOOL INSPECTION IN ROCHESTER, N. Y.

G. W. GOLER, M.D., AND A. M. JOHNSON, M.D.
Health Officer and Deputy Health Officer, Respectively
ROCHESTER, N. Y.

Medical school inspection in Rochester was begun in 1904. For a period of two months, funds for the employment of seven physicians were supplied by a private citizen, Capt. Henry Lomb. The work accomplished was of such evident value and its future believed to be so great that, in 1905, a staff was appointed, increased to twelve members, and they were given the additional work of medical inspection of school children together with the work for the sick poor of the city. These physicians are all part-time men.

From the beginning, the work was chiefly directed toward the early detection of infectious diseases, gross defects, eradication of head vermin, and the cleaning and ventilation of school buildings.

As the work progressed, the need of nurses in the schools became apparent, as it was necessary to have trained attendants get children ready for the physician, keep up the clerical work, visit the children in their homes, and carry the teaching of the school into the home.

BUREAU OF HEALTH
CITY OF ROCHESTER.

Rochester, ...192..

Name..... Age.....

Address.....

IS INSTRUCTED TO DISCONTINUE ATTENDANCE AT

School No....., located at.....

REASON: .....

.....
Medical Inspector.

NOTICE TO PARENTS

The disease mentioned on the other side of this card is a contagious affection and is liable to be transmitted to other children. The child should receive prompt treatment by a physician (or at any dispensary) and *should return to school.....192..*, for re-examination by the Medical Inspector of the Health Bureau. If found free from contagion at this time, he may resume attendance at school.

Fig. 1.—Card of exclusion, front (above) and back.

Home instruction in the care of children excluded from school because of lousiness, scabies, impetigo contagiosa, and similar affections is highly important. Instructions at home have to be given against the exchange of mittens and caps, in the use of sulphur in itch, and in the use of ointment of ammoniated mercury in impetigo (Fig. 1).

SCHEME OF ANNUAL INSPECTION

Once each calendar year, children are given a physical inspection and the results recorded on a physical record card

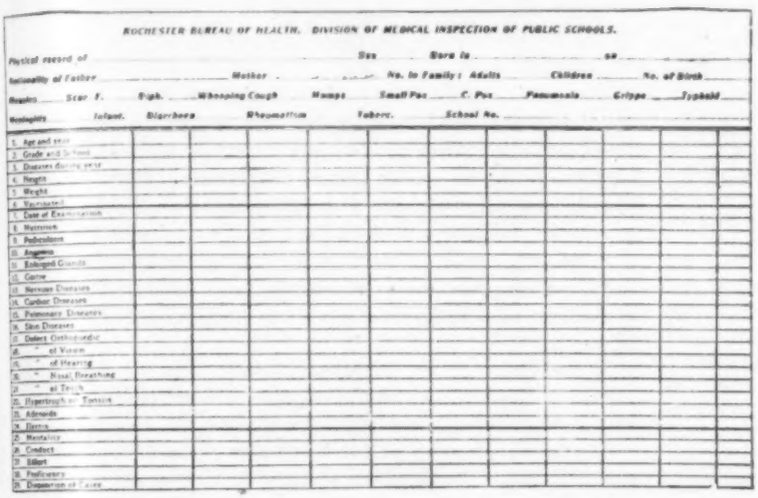

ROCHESTER BUREAU OF HEALTH. DIVISION OF MEDICAL INSPECTION OF PUBLIC SCHOOLS.

Fig. 2.—Physical record card. The original measures 7¾ by 5¼ inches. On the back are written the dates, and diagnosis, defects, exclusions and treatment needed.

(Fig. 2), which accompanies the child from grade to grade. For several years, each physician was expected to keep up these inspections in the schools of his district. This was not entirely satisfactory, as the physicians making these inspections were part-time men and their visits to the schools could not always be arranged for in advance. At the physician's visit the children often would be engaged either with tests or with a supervisor; consequently the physical inspections dragged along during the entire school year, and we were unable to get the follow-up and quickly establish desired remedial and preventive measures.

For these reasons the physical inspections in each school are now made in groups, with physicians and nurses working on time schedules previously arranged with the central school authorities and the school principals. Beginning in the early fall, these schedules are made out a week in advance, a squad of four physicians, with six nurses working on an average of from two to three mornings a week from 9 until 11:30. The physicians and nurses assemble at one school, complete the work and inspection, and then move on to the next school on the schedule (Fig. 3).

METHOD OF INSPECTION

The apparatus is set up in a well lighted corridor or the assembly room. It consists of scales with a measuring rod, which will measure down to 36 inches, a sight-testing card, and three small tables for recorders. Children arrive in single file, an entire grade at a time. Each child carries his own physical record card. At Station 1, the first child in line steps on the scales, is weighed and measured, and the figures are called to a recorder. The child then moves to Station 2, and is inspected as to general nutrition, anemia, the thyroid, other enlarged glands and orthopedic defects. These defects are called and registered by a recorder. The pupil moves to Station 3, where the nose, teeth and throat are inspected and recorded. At Station 4, the pupil advances to a separate, quiet room, where the heart and lungs are gone over by the aid of a stethoscope. The pupil moves to Station 5, where the eyes are inspected by the aid either of a Snelling or of an illuminated chart. A Schick card (Fig. 4) is given to the child, and he goes back to his class room.

The nurse tabulates the various defects, and in case of enlarged or diseased tonsils the parents are called on and the tonsil operation consent card (Fig. 5) is used, giving such advice as is necessary.

The advantages of this mode of group inspection are accuracy with rapidity, and least interference with the school program. It can be accomplished early in the school year, leaving plenty of time for follow-up and advice regarding individual defects, as well as accuracy and completeness of the physical record.

About 500 pupils can be inspected between 9 and 11:30 a. m., leaving the afternoon free for the physician. The nurses tabulate results and make such visits as are necessary in that district.

HEALTH PHYSICIAN

The city now is divided into eighteen health districts with a physician attached to each district, in which he has the care of the sick poor through "orders" coming from the department of charities (where they have been socially investigated) on through the health bureau to the physician. There is also required of these physicians the examination and commitment of the insane; the annual medical school inspection of all the pupils of the public and parochial schools of the city; their vaccination against smallpox; the administration of the Schick test, and of toxin-antitoxin vaccine to those children whose parents give written permission for it; the exclusion for the correction of physical defects and so far as possible mental defects, and the reference of mental deficients to classes for subnormal children, where a special examiner attached to the bureau clears these children to the various special classes.

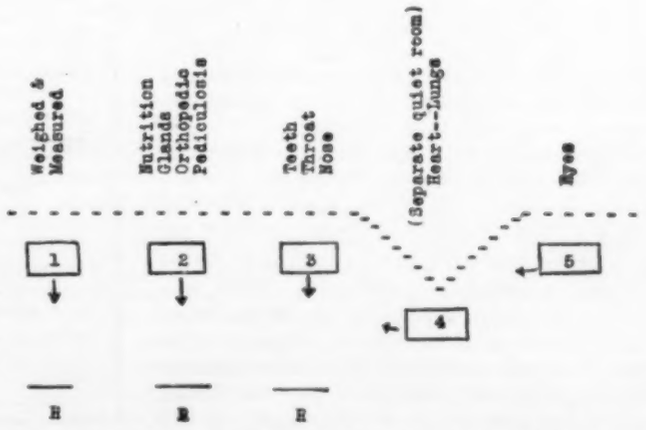


Fig. 3.—Squad inspection: *R*, recorder; line of dashes, line pursued by children; arrows, recording for stations indicated.

HEALTH NURSES

Thirty-eight of the seventy schools are supplied with nurses. A nurse is also assigned to the prenatal clinics hereinafter described in each of three different schools, the school for crippled children and its annex. No nurse is permitted to do work in any other school but her own—one nurse, one school. We are not conducting a nurses' travel club; we are trying to do intensive health nursing work in as many schools as we have nurses for, and we are using as many nurses as the administration will give us. The administration is giving us

nurses just as fast as people are willing to spend money to promote the health of their children.

The health nurse in the school has, under the direction of the physician and with the sanction of the principal of the school, general oversight of the health of the pupils in that school.

HEALTH BUREAU

1922

DIPHTHERIA CAN BE PREVENTED

If your child gets diphtheria or dies of diphtheria—a preventable disease—have you done your duty as a parent?

The Schick test is a sure way of showing whether children can or cannot take diphtheria. When children are found who may take diphtheria, they may be protected against the disease by three injections of toxin-antitoxin mixture.

We are anxious to stop diphtheria for all time and ask permission to make your child safe from diphtheria. You may have this done by your own family physician or at the school.

GEORGE W. GOLER,
Health Officer.

I want my child to be Schicked or to be given toxin-antitoxin mixture, if necessary.

.....

Fig. 4.—Schick card.

No school will have a nurse assigned to it until that school has provided a light, pleasant room, warm in winter and cool in summer, with a desk and telephone extension; one or two rattan couches with pillow and blanket; a small cabinet (not a medicine case); a table, and chairs.

Nurses are appointed under civil service. They receive $1,450 a year. They are requested (and they generally comply) not to wear their hair in bizarre form, conspicuous waists or dresses, high-heeled shoes or earrings. They do not use rouge, or in the matter of dress or decorum make themselves bad examples for the children with whom they come closely into contact.

In the nurse's room the physician and nurse see children sent either by the teacher or those who come voluntarily for physical and mental defects. While the nurse's room is used for most examinations, the nurse's room is preferred for the examination of the child. Here, too, children are taken for rest in emergency, especially adolescent girls often in pain and mental distress from lack of home information. In such a room children are vaccinated, given the Schick test, given toxin-antitoxin, and registered for tonsil and adenoid operations, dental work, refractions, examination of the ears, and reference to the orthopedic and open air school. Here, too, the real work of the nurse is done. Here children are cared for whose parents are unable to have formative or reformative work done, and in this room children are collected in groups by the nurse and taken to the dispensaries for corrective work. When children are assembled for preventive or corrective work and require dispensary care, no other thing the nurse does has such an educative and corrective value as the work done by the nurse in getting permission from the parent and taking the children in groups to various dispensaries. The old way of merely getting permission for such work, trying to get children to go to the dispensary, either with or without their parents, was found of little value. Once it has been determined that a child has a defect, the important thing to do is to get that defect corrected, and the nurse is able to get groups of children with various defects, ten or thirty in a group at a time, take them to the dispensary, have their defects corrected and later to follow them up and see that subsequent appointments are made and kept. This is the really important work of the nurses.

The children are taken to the Rochester Dental Dispensary, the Baden Street Dispensary, the dispensaries of the Rochester General, Homeopathic Hospital, St. Marys and the ear clinics of Dr. Franklin Bock, the Open Air School, and the school for crippled children.

The school children's teeth are cleaned twice a year by visiting dental hygienists in the schools; but filling, extractions and other work of the kind, including orthodontia, must be done at the Rochester Dental Dispensary. Here, too, 1,700 tonsils and adenoids are removed annually. No other corrective or preventive work in the city is superior to the dental, nose and throat work done in the Rochester Dental Dispensary, not only because of the work itself, but also because of the educational value of the work to the children in personal hygiene.

At the Baden Street Dispensary, situated in the middle of a populous district, the general physical defects of the hundreds of school children are cared for every year.

At the dispensaries of the Rochester General and Homeopathic Hospital, hundreds of children are cared for every year.

At the ear clinics conducted by Dr. Franklin Bock, a volunteer worker in two schools, not only have many children had their hearing restored, but the clinics have been made a gateway to which deaf children pass to lip-reading classes which were the direct outgrowth of the clinics.

To the Open Air School, conducted by the department of education and the health bureau, children are taken for corrective nutritional work, until such time as every school in Rochester and every other city becomes an open-air school, providing additional air, food and clothing for all of the children, the only real assets of the city.

ALLIED HOSPITAL TONSIL AND ADENOID CLINIC
ROCHESTER, N. Y.

School ..... Grade ..... Date ..... Case No. .....

I hereby authorize the administration of a general or local anaesthetic and an operation on ..... (Child's Name) Age ..... for Tonsil and Adenoid removal, and agree that the child shall remain at the Clinic at least 48 hours. I agree to pay $.....

I also authorize the Schick test, vaccination against diphtheria and smallpox, if necessary.

Address ..... Signed ..... PARENT OR GUARDIAN

MEMBERS OF FAMILY EMPLOYED	OCCUPATION	EMPLOYER	WAGE	FULL	PART
FATHER Name					
MOTHER Name					
1. Name					
2. Name					
3.					

No. of children un-employed ..... Total no. in family ..... Tot. Wk. Income .....
Illness in family .....

Remarks .....

Class A B ..... Investigator

Schick ..... Neg. ..... Pos. ..... Date Assigned ..... Hospital .....

T-A-T1 ..... 2 ..... 3 ..... Date Re-Assigned ..... Date Operated .....

THREE COPIES TO BE SIGNED AND FORWARDED TO HEALTH BUREAU

Fig. 5.—Tonsil operation consent card.

At the school for crippled children, conducted by the department of education, Dr. Ralph Fitch does corrective orthopedic work for children. Those who are in need of operations are amply provided with bed and outdoor care through the Rotary Club.

Ultimately, when the neurologic department of the university is opened, the children will be taken to a psychologic and

neurologic clinic conducted jointly by the University of Rochester and the health bureau.

PRENATAL CLINICS

Finally, the bureau conducts three prenatal clinics in Schools 5, 18 and 27. Each clinic has a prenatal nurse with a volunteer visiting obstetrician under the direction of Dr. William M. Brown, chief obstetrician, and also Drs. William H. Mitchell, A. C. Woggon and John Clifford, volunteers.

These clinics are situated in the most populous sections of the city, where births are most frequent. The aim of all this work is to conduct child welfare in the schools so that prenatal clinics will function for each group of schools, to the end that prenatal service may be had for every mother with

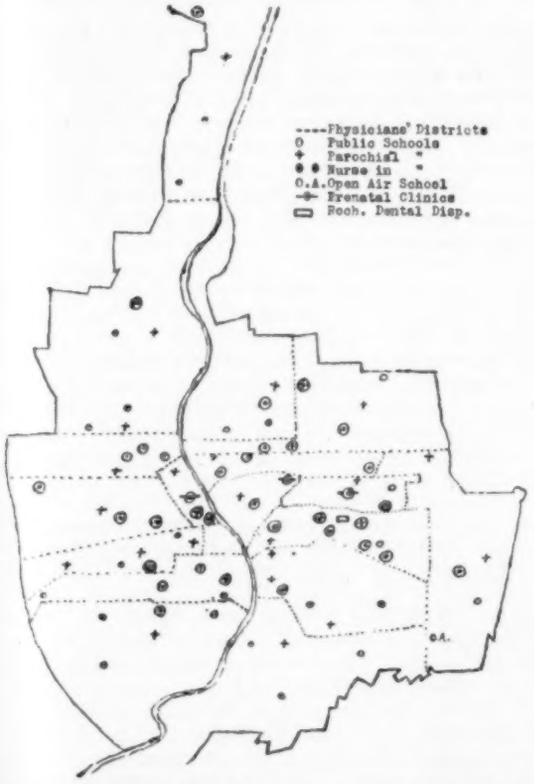


Fig. 6.—Outline map of Rochester, N. Y., showing the eighteen health districts into which the city is divided. A health physician is attached to each district. In this district he cares for the sick poor, makes insane examinations, and makes an annual physical inspection of every child in the schools in his district. The schools are marked by a circle or cross, indicating public and parochial schools. Surrounding some of these circles and crosses is another circle showing that the school is provided with a nurse. One nurse is attached to the school shown by a circle, and she does work only in that school and in no other school. The other schools are without nurses until such time as we may be able to provide nurses for them. The manner of doing the work and the results are tabulated monthly, figures being given by schools for service and care by physicians and nurses, abnormalities found, causes for exclusion, and corrections and care at hospitals and dispensaries, under the necessary subheadings.

child. The work of the school physician and nurse will ultimately be so arranged that the child may be followed from birth through postnatal life on into and out from the school, and that a card index plan may furnish the story of the child's mental and physical life from before birth into industry.

The Nucleus of an Atom.—The nucleus of a heavy atom is undoubtedly a very complicated system, and in a sense a world of its own, little, if at all, influenced by the ordinary physical and chemical agencies at our command. When we consider the mass of a nucleus compared with its volume it seems certain that its density is many billions of times that of our heaviest element.—Rutherford, E.: Address before the British Association for the Advancement of Science, Liverpool, Sept. 12, 1923.

Book Notices

A KEY TO THE ELECTROCARDIOGRAM. By Louis Faugeres Bishop, M. A., M.D., Sc.D., Professor of the Heart and Circulatory Diseases, Fordham University. Cloth. Price, $3. Pp. 96, with 48 illustrations. New York: William Wood & Co., 1923.

This book offers a simple description of the subject of electrocardiography and its clinical application, together with a brief account of the more common irregularities of the heart beat. It is well printed in large, clear type and the subject matter is well arranged. The electrocardiographic curves are well taken and clearly presented, their interpretation coinciding for the most part with accepted clinical teaching. The author emphasizes that electrocardiography should be part of a complete examination of a cardiac patient, but in certain chapters gives the impression of reading more value into the curves than they actually possess. Likewise, one feels that such statements as: "Auricular fibrillation . . . indicates a profound disturbance" (p. 16); "One is always in danger of giving too much digitalis without these tracings" (p. 76); "When the electric picture of the heart is carefully studied, all these things become perfectly clear," and "In the electrocardiogram therefore the heart writes its own story and thus indirectly the story of the whole body" (p. 10), appear dogmatic, unscientific and unduly optimistic. Such statements, taken literally, will prevent rather than extend the usefulness of this comparatively new and valuable adjunct to medical diagnosis. Finally, one cannot help but speculate as to the indications or necessity for the publication of this book, when the same subject is already adequately covered by such excellent textbooks as those of MacKenzie, Wenckebach, Willius and Sir Thomas Lewis.

RECOVERY RECORD FOR USE IN TUBERCULOSIS. By Gerald B. Webb, M.D., Consulting Physician, Cragmor, Glockner and Sunnyrest Sanatoria, and Charles T. Ryder, M.D., Cragmor and Glockner Sanatoria. Cloth. Price, $2 net. Pp. 189, with 108 charts. New York: Paul B. Hoeber, Inc., 1923.

How does a consumptive get well? Not by any specific remedy that kills the tubercle bacilli or gives resisting power to the body cells, but by the building up of his power of resistance through the practice of correct habits of eating, resting, breathing—in short, of right living. The sanatorium for tuberculosis, which is such an important factor in the modern campaign against this disease, is, in reality, a school for the instruction of the victims of consumption, designed to instruct them how to order their daily lives so as to promote their own restoration to health, and not to be a menace to those about them. In arranging his daily routine, it is desirable that the tuberculous person should keep, or have kept for him, a daily record of the temperature of his body as shown by the clinical thermometer. A temperature above 98.8 F. is an order for rest in bed. This neatly printed, convenient book consists of clinical charts for the recording of the temperature curve, the pulse, the weight—also an important index of progress—and of general notes and questions and questions for one's physician. At the top and bottom of each chart there appears a striking question from some authority on tuberculosis, or some literary author of distinction. But this is not all. Eighty pages are devoted to helpful advice to the patient, arranged in chapters on the record of recovery, the technic of recovery, the hygiene of recovery, and accidents and obstacles. The injunctions are driven home by pithy epigrams. "He who doctors himself has a fool for a physician." "Idleness is merely doing nothing; laziness is doing nothing with a contentment and gusto." "Of all the countless remedies proposed, *rest* alone has stood the test of time." "Treat yourself as though you were made of glass." "Be lazy; be selfish"; but "laziness and selfishness are to be regarded as necessary but dangerous drugs, to be discontinued as soon as possible." "Many a man has made important advances in the knowledge of his calling, of literature, and of truth, while confined to his bed or a reclining chair." "In connection with reading, there are two habits which are of the greatest permanent value, annotating and memorizing." In the discussion of diet we read: "Three square meals a day and plenty of water"; but

also that "stuffing in tuberculosis is an outgrown fad," and "getting fat does not cure tuberculosis." "Fresh air is to be taken externally, internally, eternally." Of clothing, "Wear as much as you need to keep warm, but no more"; "do not let cold or rain catch you unprepared"; and "do not let your feet be cold day or night." Personal cleanliness is advised, but of the danger of overmuch bathing during the active disease, one is enjoined that "it is better to be dirty and well than clean and sick." Concerning cough and expectoration, "never cough if you can help it." For the protection of others, "avoid all close contact with children." And of climate, a cool, high, dry climate "stimulates the bodily functions without causing fatigue," and is to be sought "*if* you can do so without sacrificing these more essential things, rest, good food, comfort, and peace of mind." More detailed discussion explains the application and limitations of these injunctions. This is an admirable book for the physician to put in the hands of a tuberculous patient as a supplement to, and in, some cases, as a substitute for personal advice given in the sanatorium or the home.

DENTAL STATE BOARD QUESTIONS AND ANSWERS. By R. Max Goepp, M.D., Professor of Clinical Medicine at the Philadelphia Polyclinic. Third edition. Cloth. Price, $3.75 net. Pp. 433. Philadelphia: W. B. Saunders Company, 1922.

STATE BOARD QUESTIONS AND ANSWERS. By R. Max Goepp, M.D., Professor of Clinical Medicine at the Philadelphia Polyclinic. Fifth edition. Cloth. Price, $6 net. Pp. 731. Philadelphia: W. B. Saunders Company, 1923.

These two works are so near alike that they may be reviewed together. As the questions contained in the two volumes were selected from state board questions asked during the last few years, they are representative of the kind of examination questions usually propounded by state boards. Almost every branch of medicine and dentistry is covered, from physics and chemistry to hygiene and medical jurisprudence. As it is impossible for so many state boards holding examinations several times yearly to formulate entirely new questions for each examination, it is evident that the questions contained in these volumes will continue to be asked over and over again so long as a man's fitness to practice these professions is determined by his ability to answer similar questions. Medical and dental students, therefore, will find these books a convenient help in preparing themselves to take state board examinations.

LABORATORY STUDIES IN TROPICAL MEDICINE. By C. W. Daniels, M.B., F.R.C.P., Director of the Institute for Medical Research, Federated Malay States, and H. B. Newham, C.M.G., M.D., M.R.C.P., Director of the Department of Tropical Pathology, London School of Tropical Medicine. Fifth edition. Cloth. Price, $7, net. Pp. 576, with 187 illustrations. New York: William Wood & Co., 1923.

This laboratory manual is detailed, is generally accurate, and in the main keeps abreast of current progress. While some of the directions concern very simple and elementary laboratory manipulation, it must be remembered that such a book may perhaps be the sole resource of workers in remote parts of the world, and that it may have to be relied on by men variously trained in animal parasitology, in protozoology or in bacteriology. One can, of course, find omissions or points to which exception may be made. Bile salt broth is recommended for the isolation of *Bacillus coli* in water examination. Advantage has not been taken of recent work on the parasites of hookworm disease. Mosquito larvae are not adequately illustrated—there is a fearsome picture of a larval head on page 497. Nomenclature is not always in accord with the recent pronouncements of systematists—for example, in the retention of the generic name of *Stegomyia* for the yellow fever mosquito, in place of *Aedes*. These may all be shortcomings, but they do not affect seriously the usefulness of this handbook.

ARTERIOSKLEROSE UND HYPERTONIE UNTER BERÜCKSICHTIGUNG IHRER BEZIEHUNGEN ZUR GEWERBEHYGIÉNE UND IHRER BEKÄMPFUNG AUF ORGANOTHERAPEUTISCHEM WEGE. Von Hermann Griesbach, Dr. Med. et Phil. Ord. Honorarprofessor an der Universität Giessen. Paper. Pp. 56. Giessen: Alfred Töpelmann, 1923.

The title indicates a general treatise on arteriosclerosis and hypertension. As a matter of fact, it appears to be a piece of propaganda work for a new organotherapeutic product named "animasa." "Animasa" is said to be prepared from the intima of blood vessels and from erythrocytes, and it is stated that when given by mouth, both to normal persons and to persons with hypertension, it lowers the blood pressure from 10 to 20 mm. of mercury. This lowering of the blood pressure disappears within two or three days on stoppage of the administration of the product. The author confesses he does not know in what way "animasa" lowers the blood pressure, but suggests that it might be through its histamin content. If this guess should be correct, it seems at present a highly dubious practice to administer a substance containing enough of the highly poisonous histamin to produce this degree of histamin shock.

INSANITY AND THE CRIMINAL LAW. By William A. White, M.D. Cloth. Price, $2.50. Pp. 281. New York: The Macmillan Company, 1923.

This is a psychiatrist's plea for justice for the so-called criminal: for justice in harmony with the formulas of the deterministic psychology of today. The criminal is merely the product of birth and environment, of overwhelming circumstances over which he has no control. He is sinned against, not sinning. Society is the wrong-doer. Methods established by society for judging between itself and the alleged offender are irrational, the outcome largely a matter of casuistry and chance, and punishment merely the gratification of a desire for vengeance, incapable of preventing antisocial conduct or of repairing the consequences of it. And the mentally defective classes are the chief victims of the system. The road to reform, according to the author, lies through an enlargement of the sphere of the trained psychologist, a restriction of the field of the expert witness and a better training of lawyers, especially of judges, in the psychology of the antisocial classes. Dr. White's standing in the field of psychiatry, the earnestness with which he presents his case, and the thirty years' study and observation lying back of it, all entitle the book to critical study.

CURES. The Story of the Cures That Fail. By James J. Walsh, M.D., Ph.D., Sc.D., Professor of Physiological Psychology, Cathedral College and College of the Sacred Heart, New York City. Cloth. Price, $2. Pp. 291. New York: D. Appleton & Co., 1923.

Mystical and magical healing are as old as mankind itself, and there will no doubt continue to be magical healers as long as there will be human beings to believe them. Dr. James J. Walsh, noted particularly for his writings in the field of medical history, has here considered, in a light literary survey, the cures of all time. Beginning with personal healers, he passes through the time of Mesmer and Perkins tractors through Christian science, appliance cures, manipulation cures, mythical cures and eventually to Coué. Dr. Walsh is at great pains to explain just how each of the methods he describes is fallacious, but he realizes, of course, that the explanation will not satisfy those who believe. In fact, when one considers the psychology of the reader one realizes that the persons who will enjoy Dr. Walsh's book and get the most from it are those who already know the things that Dr. Walsh is trying to teach. Physicians who know the fallacies of all the peculiar cults will enjoy having Dr. Walsh put these things into words, and they will relish his raillery at those who are so ignorant as to be duped. Unfortunately, the lay reader has not a sufficient knowledge of his own body mechanism, let alone of the intricate processes of immunology and infection, to understand the fallacies of the exploited "cures" after they are pointed out. For those who are willing to learn, Dr. Walsh has prepared a worth while study.

FOOD FOR THE DIABETIC. What to Eat and How to Calculate It With Common Household Measures. By Mary Pascoe Huddleson, Consulting Dietitian, with an Introduction by Nellis Barnes Foster, M.D., Assistant Professor of Medicine at Cornell University Medical School. Cloth. Price, $1.25. Pp. 75. New York: The Macmillan Company, 1923.

This little volume is written from the point of view of a consulting dietician whose work is to carry out the physician's orders. The book is well planned, concisely written, and has excellent, simple tables of food values and food equivalents. It also contains many recipes. It is a book that can be placed in the hands of diabetic patients with the assurance that it will be a safe and sound guide.

Miscellany

MODIFIED METHOD OF ADMINISTERING CARBON TETRACHLORID

Since February, 1922, more than 60,000 persons in Fiji have been treated for hookworm disease with carbon tetrachlorid. After 42,000 treatments had been given with no serious results, three deaths occurred in the course of the next 8,000 (THE JOURNAL, Feb. 24, 1923, p. 526). About that time, Macht published a paper in which it was shown that the specific action of a drug is delayed or nullified when administered in magnesium sulphate solution because a contrary current is set up in the intestinal wall preventing or delaying absorption. The director of the International Health Board, Dr. F. F. Russell, suggested to field workers in hookworm disease that this action of magnesium sulphate might make the use of carbon tetrachlorid entirely safe. After trial treatments, the administration of the two drugs simultaneously was undertaken in field work in Fiji, and the results have been reported by Dr. S. M. Lambert, director of the board's work at that place.

In routine work, from 50 to 60 minims of tetrachlorid in 1½ ounces of magnesium sulphate solution is given to adults, according to the size of the individual. Children are given from 3 to 4 minims to the year according to size in appropriate doses of magnesium sulphate. With this method, there have been no reports of headache, a symptom that was not uncommon when the drug was administered alone and followed by the purge. No patients have entered the hospital subsequent to administration of the drug, although hospital treatment is free. Seven thousand persons have been thus treated in the field where dysentery and typhoid fever are not rare. A few persons reported purging for several days, and there is a certain amount of vomiting soon after the dose is given. Security is increased if the carbon tetrachlorid is given with the magnesium sulphate, as both are rejected if there is vomiting. The advantage of tetrachlorid in treating hookworm disease in pregnant women is emphasized, since with other vermifuges pregnancy was frequently interrupted. In months of routine treatment of these women with tetrachlorid, no abortions have been reported. Carbon tetrachlorid was also effective against ancylostomes as well as necators. In a series of treatments in which the worms were carefully counted, among 280 worms removed there were seventeen acylostomes. A later test treatment removed two worms, one of which was an ancylostome.

The report concludes that carbon tetrachlorid in proper dosage in saturated solution of magnesium sulphate is a safe, reliable anthelmintic for both kinds of hookworm, and that few and minor symptoms result. It also reduces the cost of treating whole populations because it is time saving.

THE FIGHT AGAINST VENEREAL DISEASES IN DENMARK

A booklet with this title, by Prof. C. Rasch and Dr. S. Lomholt of the University of Copenhagen, states that as early as 1672 laws were passed in Denmark penalizing all medical empiricism, and in 1788 free treatment of venereal diseases was introduced. In 1859 a law was passed penalizing transmission of a venereal disease, and in 1869 a specialist course in the curriculum was made compulsory. The law making compulsory the Credé method of prophylaxis of ophthalmia neonatorum was adopted in 1900, and in 1922 the presentation of a certificate of noncontagious condition by candidates for matrimony who have been under treatment for venereal disease was made compulsory. The measures have been so strictly enforced that physicians never encounter patients now who have been previously treated by charlatans. Treatment is gratuitous, even for the well-to-do if they wish, including blood tests. The total number of venereal patients in the public hospitals in 1922 was 4,613, in a population of 3,300,000. The total of other patients in these hospitals was 150,000, during this period. The beds in the public hospitals (exclusive of the tuberculosis sanatoriums and institutions for the insane) total 14,300; that is, one bed for each 240 inhabitants. The State Serum Institute applies the Wassermann tests for the entire country, with a card catalogue of the cases to prevent duplication, identification being by the record of sex; year and day of birth; first letter of family name; date of diagnosis of syphilis; name of physician who made the diagnosis or the hospital where it was made, and the number of the patient on the physician's record or the hospital records. By this card catalogue record the patients can be traced from the date of their infection, from hospital to hospital, till their death, and any physician can obtain at any time, without giving his patient's name, all the information as to the preceding phases of his venereal disease. The card catalogue now contains 25,000 cards. The number of new cases in 1921 was 1,942 and in 1922, 1,578; of congenital syphilis, 142 and 95, respectively. If a patient neglects to continue treatment of syphilis, the attending physician is required by law to inform the public health authorities. This provision very rarely has to be enforced, as the legal requirements influence the most heedless. About sixty or seventy cases come before the courts each year at Copenhagen in prosecution of those who have reason to suspect they have venereal disease, and who expose others by sexual intercourse.

Medicolegal

Doubt as to Sanity or Insanity—Opinions as to Smoking of Mariahuana—Evidence as to Syphilis

(Cadena v. State (Texas), 251 S. W. R. 225)

The Court of Criminal Appeals of Texas, in affirming a conviction of defendant Cadena of murder, says that he complained of the refusal of the trial court to allow him to ask all the jurors whether, if they should be taken on the jury and after the evidence was all in there should be in their minds a reasonable doubt as to whether or not he was sane or insane, they would be willing to give him the benefit of the doubt and find him insane. As the court of criminal appeals views the matter, this question was so framed as not to present an issue; "a reasonable doubt as to whether or not defendant was sane or insane" presented the matter so as to make it impossible to determine whether the doubt inquired of was as to sanity or insanity. The use of the expression "whether or not" further added to the confusion of the question. It has never been the rule in Texas that sanity must appear beyond a reasonable doubt. Sanity is presumed until the contrary is made to appear, and this is one of the issues in which the burden shifts to the accused, who interposes the defense of insanity, and it is held that he must prove the latter by a preponderance of the testimony.

It was suggested that the defendant was a smoker of mariahuana, and that from the effects of the use of that drug he had developed a homicidal mania. To show that he was under the influence of that drug there was testimony that the night preceding the homicide he smoked a great deal, and that what he smoked smelled very bad; that about four nights before that he smoked cigarets that looked and smelled like mariahuana; that about fifteen years before that he had asked one of the witnesses to get him some mariahuana; and another witness testified that on a date not given he saw the defendant smoking and afterward acting queerly, and found that a partially smoked cigaret which the defendant threw away was mariahuana. To a physician who testified that he had observed the effects of the use of mariahuana on persons, the facts attending the homicide were then stated as well as testimony here summarized, and he was asked, assuming that the testimony was true, whether or not he would conclude therefrom that the cigarets smoked by the defendant on the night preceding the homicide were mariahuana. The state objected to this testimony, and to the trial court's refusal to allow it, a bill of exceptions was reserved. The court of criminal appeals knows of no authority that goes to the extent of holding such testimony admissible. The physician, as an expert, could state what condition of the mind would follow the use of mariahuana. The fact of the use of such drug, and the amount used could be proved by witnesses who knew such facts. But it seems to be the rule that expert

opinions must be limited to matters of science, skill, trade and the like, and will not be allowed to usurp the province of the jury on matters of fact of which the jury is made the judge by our laws.

Another contention was that the defendant should have been granted a new trial because of newly discovered evidence; but there was no error in the refusal to grant it. Physicians who examined the defendant at the time of his trial said that in their opinion he was then normal; which fact being true, the defendant must have been in condition to have informed his counsel of any testimony favorable to his defense which was then within his possession. The facts set up as newly discovered were necessarily within his knowledge, and if he failed to disclose them to his attorneys it was his misfortune. This new evidence was of the fact that the defendant had syphilis. Not only was this not newly discovered evidence within the contemplation of Texas law, but this court does not think it of that materiality which would call for granting of a new trial, and which would make it appear that the trial judge had abused his discretion in the matter.

Immaterial Averment About Not Recording License—Drugless Healer

(Feige v. State (Okla.), 215 Pac. R. 437)

The Court of Criminal Appeals of Oklahoma, in affirming a judgment of conviction of defendant Feige, says that it was charged in the information that he did unlawfully practice medicine within that state without first having obtained from the state board of medical examiners a certificate as provided by law entitling him to practice medicine within the state, and that he had not recorded any certificate with the county clerk. The latter statement he contended made the information duplicitous, but the demurrer which he interposed to the information on that ground was overruled, and this court is of the opinion that his contention was without merit. The information as a whole clearly attempted to state and did state the offense of practicing medicine without a license and set out in detail the character of such practice. The statement that the accused had not recorded his certificate with the county clerk was not of itself a distinct or separate averment; it was simply an explanatory clause that could have been omitted; it was mere surplusage. It is apparent that, if the accused was practicing medicine without having obtained a license, no license was recorded with the county clerk. In this case the one offense included the other, and the averment that no license was recorded with the clerk was immaterial so long as it appeared, as it manifestly did in this case, that the accused was being prosecuted for practicing without a license.

The proof showed, and the defendant himself admitted, that he maintained an office in Oklahoma City, where he held himself out as a person competent to treat those afflicted with various physical infirmities, and for which a fee was charged. Certain witnesses for the state testified that in the course of his practice he had advised and directed them to use an Epsom salt solution as an eye wash. This he denied, thus raising an issue of fact for the jury.

The defendant contended that he was not practicing medicine within the meaning of the Oklahoma statute, but was a drugless healer; that his system was to use Nature's remedies to purify the blood and to stimulate the different organs of the body by physical culture and proper food selection and by fasting. It appeared that he also practiced psychic suggestion. But where a person maintains an office and holds himself out as competent to treat and heal those afflicted with physical infirmities by drugless healing methods it is incumbent on him to procure a license to pursue such practice, as provided by penal statutes Sections 8815 and 8818, Compiled Statutes of Oklahoma of 1921. Section 8818 provides that any person claiming to practice any drugless system of healing must have attended a reputable college for a period of not less than twenty-seven months and passed examinations in anatomy, chemistry, bacteriology, pathology, surgery, physical diagnosis, etc. It appeared that the defendant could not legally qualify as a drugless healer any better than as a regular practicing physician. From the whole record, the court concludes that the information was sufficient, and that there was sufficient evidence to support the verdict.

Desire to Ventilate No Excuse for Failure to Heat—Contraction of a Cold

(Davis, Agent, v. Allen (Ky.), 251 S. W. R. 194)

The Court of Appeals of Kentucky, in affirming a judgment for $700 damages recovered by Mrs. Allen against the director general of railroads, says that her evidence was to the effect that on Nov. 30, 1918—a cold day with a stiff wind blowing—she was for about half an hour in an unheated waiting room of a railroad station, and then for an hour in an unheated coach of which windows were raised; that while she was in the waiting room and on the train she was shivering, and when she alighted she was sneezing and suffering from the effects of a cold; that this developed into grip, and that from the third day she was confined to her bed for six weeks.

On this appeal it was insisted that a peremptory instruction for the defendant should have been given because (*a*) this was at the period of the outbreak of influenza and the defendant's agents were endeavoring to prevent the spread of that disease, and were not negligent; (*b*) the plaintiff contracted influenza, which is a germ disease, and not caused by exposure, and if negligence existed it was not the proximate cause of her injuries; (*c*) if negligent, it could not be told with any degree of certainty whether the plaintiff suffered from influenza, for which the defendant was not responsible, or from a cold, for which he might be liable, and the jury should not be allowed to speculate on this question. It was true that this occurred during the epidemic of influenza of 1918.

The history of that period may show that the traveling public and transportation companies united in an effort to secure proper ventilation of public conveyances and stations; but it could not be urged that the duty on the part of the defendant to keep his waiting rooms and passenger coaches comfortably heated was to any degree relaxed; and that his agents were negligent in this matter was clearly established. As to whether there was evidence of a causal connection between this negligence and the plaintiff's injuries was not a difficult question. It is a matter of common knowledge that colds may be easily contracted under conditions such as described, and the uncontradicted evidence showed that the plaintiff did contract such a cold on this journey, and that her sickness followed. The doctrine that, when an injury may have resulted from one of two probable causes, one being the negligent act complained of and the other some cause for which the defendant is not responsible, the jury will not be permitted to speculate as to its verdict, had no application to the facts of this case. There was no evidence whatever that the plaintiff contracted any other character of disease than that claimed by her, and no physician testified that her symptoms would indicate otherwise; and the suggestion that she did was of itself conjectural.

Society Proceedings

COMING MEETINGS

American Pathological Society, St. Louis, Dec. 27-29. Dr. Wade H. Brown, Rockefeller Institute for Medical Research, New York, Sec'y.
American Physiological Society, St. Louis, Dec. 27-29. Dr. Charles W. Greene, University of Missouri, Columbia, Mo., Secretary.
American Society of Biological Chemistry, St. Louis, Dec. 27-29. Dr. Victor C. Myers, New York Post-Graduate Medical School, New York, Secretary.
Porto Rico, Medical Association of, San Juan, Dec. 14-16. Dr. Augustin R. Laugier, Box 1117, San Juan, Secretary.
Radiological Society of North America, Rochester, Minn., Dec. 3-7. Dr. M. J. Sandborn, Appleton, Wis., Secretary.
Society of American Bacteriologists, New Haven, Conn., Dec. 27-29. Dr. J. M. Sherman, Box 184, Washington, D. C., Secretary.
Southern Medical Association, Washington, D. C., Nov. 12-15. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.
Southern Surgical Association, White Sulphur Springs, W. Va., Dec. 11-13. Dr. H. A. Royster, 423 Fayetteville Street, Raleigh, N. C.
Western Surgical Association, Colorado Springs, Colo., Dec. 6-8. Dr. Warren A. Dennis, Hamm Bldg., St. Paul, Minn., Secretary.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Annals of Otology, Rhinology and Laryngology, St. Louis

32: 641-952 (Sept.) 1923

Further Observations of Mastoid Structure by Means of Roentgen Ray. N. Bigelow and I. Gerber, Providence, R. I.—p. 641.
Incidence and Histopathology of Bone and Cartilage in Tonsil. C. V. Weller, Ann Arbor, Mich.—p. 687.
Relation of Optic Nerve to Last Posterior Ethmoid Cell. S. B. Westlake, St. Louis.—p. 729.
Study of Mechanism of Pain as Seen in Rhinologic and Laryngologic Cases. L. Hubert, New York.—p. 749.
Recent Nasal Fractures. I. Frank, Chicago.—p. 768.
Otologist in Field of Sociology (Alliance of Medical and Social Sciences in Prevention and Palliation of Acquired Deafness). W. C. Phillips, New York.—p. 780.
Aids of Hearing. G. Beery, Worcester, Mass.—p. 807.
Mastoiditis in Aged. R. A. Fenton, Portland, Ore.—p. 810.
Alcohol Injections as Possible Adjunct to Tonsillectomy Under Local Anesthesia. R. Sonnenschein, Chicago.—p. 827.
Clinical Diagnosis of Laryngeal Tuberculosis. F. R. Spencer, Boulder, Colo.—p. 838.
Differentiation of Neurolabyrinthitis Syphilitica and Labyrinthitis Syphilitica Tarda. G. W. Mackenzie, Philadelphia.—p. 847.
Parotid Fistulae After Mastoid Operation. W. E. Grove, Milwaukee. —p. 855.
Lymphoid Tissue in Tonsillar Fossae Following Tonsillectomy. B. B. Grichter and S. J. Pearlman, Chicago.—p. 860.
Clinical and Pathologic Study of Tonsil Cases. A. G. Morris, Rochester, N. Y.—p. 864.
Radical Mastoidectomy; Complete Healing. Method of Controlling Persistent Vertigo. J. L. Maybaum, New York.—p. 875.
Some Aspects of Aphonia, Psychic and Otherwise. J. A. Babbett, Philadelphia.—p. 879.
Foreign Bodies in Upper Air and Food Passages. Clinical Report. H. B. Graham, San Francisco.—p. 886.
Cochlea-Palpebral Reflex in Infants. T. Demetriades, Athens, Greece. —p. 894.
Precautions in Using Local Anesthesia. Report of Death. C. C. Eves, Philadelphia.—p. 904.
Waring Suction Tonsillectomy. J. B. H. Waring, Blanchester, Ohio. —p. 913.
Otogenic Sympathetic Meningitis: Report of Case with Recovery After Radical Mastoid Operation. J. W. Downey, Jr., F. A. Pacienza and O. G. Costa, Baltimore.—p. 923.

Archives of Dermatology and Syphilology, Chicago

8: 325-460 (Sept.) 1923

*Malignant Melanoma in Negro. L. A. Sutton and W. M. Mallia, Albany, N. Y.—p. 325.
Urticaria Pigmentosa (Nodular Type). Summary of Literature. Report of Case. C. W. Finnerud, Chicago.—p. 344.
*Biologic Reactions of Arsphenamin. VII. Relative Therapeutic Efficiency of Gelatin Arsphenamin and Disodium Arsphenamin. J. Oliver, E. Douglas and F. Kolos, San Francisco.—p. 359.
Poikiloderma Atrophicans Vasculare. Conclusion of Previously Reported Case. J. E. Lane, New Haven, Conn.—p. 373.
Keratosis Palmaris Et Plantaris Due to Frambesia. P. D. Gutierrez, Manila, P. I.—p. 382.
Gonorrheal Keratoderma. Report of Case. A. W. Stillians and E. P. Zeisler, Chicago.—p. 393.
*XXIX. Melanoma of Lower Lip. Report of Case. E. W. Netherton, St. Louis.—p. 402.
*Experimental Aspects of Iodid and Bromid Exanthems. U. J. Wile, Ann Arbor, Mich.—p. 407.
Carbon Tetrachlorid in Dermatology. H. E. Alderson, San Francisco. —p. 411.
Colloid Acne. Is Colloid Acne a Form of Colloid Milium? S. S. Greenbaum, Philadelphia.—p. 417.

Malignant Melanoma in Negro.—A complete study of a fatal case of malignant melanoma of the left leg in an aged negress, with necropsy findings, is presented by Sutton and Mallia. Of chief clinical interest was the syndrome which led to the diagnosis of gangrene of the leg and to amputation supposedly for this condition. This consisted of (*a*) marked generalized arteriosclerosis; (*b*) falling off of the small toe; (*c*) diffuse blackening of the skin of the entire leg; (*d*) edematous swelling. The tumor arose in the region of the small toe and invaded diffusely the subcutaneous tissues, blood and lymph channels, the leg as far as the inguinal ligament being uniformly pitch black. Metastasis occurred to the liver, lungs, kidneys, heart, spleen, uterus and retroperitoneal tissues. No pigmented nevus or other growth was found as a starting point. The question is raised as to the possibility of chronic irritation and two fairly definite injuries to the small toe, together with local anemia, being responsible for the genesis of the new growth which may have been derived from the chromatoblasts of the negro's epidermis.

Therapeutic Efficiency of Gelatin Arsphenamin and Disodium Arsphenamin. — According to the observations reported on by Oliver et al., gelatin arsphenamin is somewhat less trypanicidal in vitro than disodium arsphenamin. Gelatin arsphenamin is retained in the animal at a higher concentration for a longer period than is disodium arsphenamin. Gelatin arsphenamin is as effective as disodium arsphenamin in the treatment of experimental trypanosomiasis and rabbit syphilis. Under certain conditions it is more effective. Therapeutic indexes established on the basis of the late or chemical toxicity of the two preparations favor gelatin arsphenamin as compared to disodium arsphenamin. The immediate toxic effects of disodium arsphenamin may be avoided under experimental conditions by the use of gelatin arsphenamin without any sacrifice in therapeutic efficiency.

Melanoma of Lip in Child.—A case of melanoma of the lower lip occurring at a very early age (2 years) is reported by Netherton. Although histologically the tumor was a melanoma, clinically it could not be differentiated from sarcoma. The rapidity of growth following roentgen-ray therapy was characteristic of melanoma. The prognosis was hopeless.

Iodid and Bromid Exanthems.—Three patients, all women, suffering from mental and cutaneous manifestations of bromism, were markedly benefited, both with regard to the mental state and to the cutaneous condition, by the intravenous administration of decinormal sodium chlorid solution given at two or three day intervals. In all three cases bromin could not be determined in the urine previous to the administration of the salt solution. The prompt appearance of the bromin in two cases following the first injection and in the third case following the second injection, leads Wile to the conclusion that the mass action of the chlorid had thrown bromid out into the blood, relieving the apparent mental toxemia, and in a similar fashion causing a marked diminution and gradual disappearance of the cutaneous manifestations. Intravenous injection of physiologic solution of sodium chlorid is advocated in the treatment of both cutaneous and mental symptoms of "bromism."

Archives of Neurology and Psychiatry, Chicago

10: 267-380 (Sept.) 1923

*Centrifugation of Nervous System. Method for Neurocytologic Study. An Experimental Investigation of Cellular Changes in Commotion. S. Ingvar. Lund, Sweden.—p. 267.
*Histologic Changes Produced Experimentally in Central Nervous System of Monkeys by Mercury. B. Lucke and J. A. Kolmer, Philadelphia.—p. 288.
Sella Turcica of Mongolian Imbeciles. G. S. Stevenson and A. D. Stultz, Vineland, N. J.—p. 299.
Case of Porencephalic Defect Associated with Tuberculous Encephalitis. Histopathologic Support to Strümpell Theory of Inflammation. R. P. Winterode, Crownsville, Md., and N. D. C. Lewis, Washington, D. C.—p. 304.
Experimental Vestibular Tremors with Analogous Clinical Cases. C. L. Woolsey, Boston.—p. 314.
*Neurosyphilis in Aged. A. E. Bennett, Philadelphia.—p. 324.
Factor of Deterioration in Children Showing Behavior Difficulties After Epidemic Encephalitis. M. Sherman and B. I. Beverly, Chicago.—p. 329.

Effect of Centrifugation on Living Ganglion Cells.—Ingvar asserts that prolonged intense centrifugation of living ganglion cells can bring about a separation of the cell constituents or an alteration of their mutual interrelations. This has a bearing on the effects of severe trauma, concussions and other physical forces on the nervous system. It supports strongly the assumption that direct cellular disturbances are the cause of many acute commotional symptoms. The part of the ganglion cell that can be moved most easily within the cell by centrifugation is the nucleolus. After a short centrifugation this is always thrown to the distal end of the nucleus and proves that this latter is a vesicle, the contents of which have a low viscosity. The next most conspicuous change after centrifugation consists in an accumulation of the chromatophil substances at the distal end of the cell, and proves that these bodies must exist in a fluid condition in the living cell. This accords with the observations on the living cell with the

ultramicroscope. The canalicular apparatus is squeezed out of its position in the cell by centrifugation, but maintains its normal morphologic character; this demonstrates that the contents of this apparatus do not mix with the chromatophil substances and that they probably have a high viscosity. The neurofibrils show less elasticity than surrounding constituents and can be separated from other parts of the cell. The whole net of neurofibrils loosens as a unit from the cell membrane and, when centrifugation has been sufficiently strong, occupies the center of the cell and encloses the nucleus. This, Ingvar asserts, proves that the doubts raised in modern histologic literature as to the neurofibrils are not justified; the neurofibrils exist in the living specimen and are not artefacts brought about by fixative agents.

Effect of Mercury on Central Nervous System.—Mercury, administered by Lucke and Kolmer over a period of three months to monkeys, caused proliferative, degenerative, and slight exudative changes in the central nervous system. It is suggested that mercurial administrations may play a minor rôle in the production of the histopathologic picture of general paralysis.

Neurosyphilis in Aged.—Bennett presents the results of a study of nineteen cases of senile neurosyphilis occurring in a series of 2,175 cases of all types of nervous syphilis.

Archives of Surgery, Chicago

7: 237-468 (Sept.) 1923.

*Extensive Hemorrhagic Extravasation from Venous System of Galen, with Clinical Syndrome. Report of Three Fatal Cases with Two Necropsies. C. Bagley, Jr., Baltimore.—p. 237.
Resection of Proximal Colon for Malignancy. F. W. Rankin, Louisville, Ky., and A. J. Scholl, Rochester, Minn.—p. 258.
*Unusual Alteration in Natural History of Giant Cell Tumor of Bone. W. S. Stone and J. Ewing, New York.—p. 280.
*Brain Abscess with Especial Reference to Abscess of Frontal Lobe. H. H. Kerr, Washington, D. C.—p. 297.
*Transfusion of Unmodified Blood (Unger Method). O. A. Brines, Detroit.—p. 306.
*Empyema Necessitatis and Some Allied Conditions. F. J. Tees, Montreal.—p. 321.
Intra-Abdominal Hernia. N. H. Copenhaver, Rochester, Minn.—p. 332.
*Deetherization by Means of Carbon Dioxid Inhalations. Pulmonary Ventilations and Ether Tension During Anesthesia. J. C. White, Boston.—p. 347.
*Endothelioma of Spleen. Study of Two Cases. Review of Literature of Primary Malignancy of Spleen. C. E. Smith and G. Y. Rusk, San Francisco.—p. 371.
Twenty-First Report of Progress in Orthopedic Surgery. R. B. Osgood, R. Soutter, H. C. Low, M. S. Danforth, C. H. Bucholtz, Lloyd T. Brown, P. D. Wilson and M. N. Smith-Petersen, Boston.—p. 415.

Hemorrhagic Extravasation from Venous System of Galen.—The clinical course was identical in the three cases reported by Bagley. An early sharp rise of temperature, amounting to nearly 3 degrees, a few minutes after the accident in the one case, and to 5.5 degrees ten hours after in the second case, marked the beginning of a hyperpyrexia that continued throughout the course and gradually increased to from 106 to 107 F. in all cases at the time of death. The respiratory and pulse rates were greatly elevated in all cases. In one case the pulse rate was 120 and the respirations 56 a few hours after the accident, and the pulse rate was 160 before the end of twenty-four hours after coming under observation, after which it ranged between 125 and 170. The respiration rate during the entire course ranged between 26 and 62 per minute. In all cases, muscle power was affected to a greater or less degree, and increase of deep reflexes was present. Disturbance was chiefly of the spastic type, with predominance of loss of power on one side in one case. The pupillary reactions were disturbed and there was blood in the cerebrospinal fluid in all cases. In the same case a small opening was made in the temporal region and the intracranial tension was found to be less than normal; indeed, the brain seemed to be almost shriveled and was very easily compressed by the spatula. In the second case, the ventricle was aspirated through a burr opening over the occipital pole. In this case, there was a space of at least 1 cm. between the dura and the cortex of the brain showing lack of a normal degree of intracranial pressure. The pathologic findings in the two cases that came to necropsy, Bagley believes, justify the conclusion that the symptom complex was based on a definite morbid state. The morbid anatomy was so definitely limited to the structures anatomically related to the vein of Galen and its tributaries that it is believed such a syndrome can be accounted for in the lesions described. Some of the signs—for example, disturbance of muscles, spasticity, weakness and increase of deep reflexes—are fully accounted for by the pathologic findings; while others, hyperpyrexia, unconsciousness, and low intracranial pressure, could, perhaps, better be attributed to lesions of this part of the brain than to those of any other.

Unusual Alteration of Giant Cell Tumor.—The record of the case presented by Stone and Ewing is of interest from several aspects. The transformation of the structure of a benign giant cell tumor, while evidently very rare and not previously recorded in this disease, finds a parallel in similar transformations that have occurred in many other tumors, benign and malignant, after surgical and other forms of trauma. The development of metastases in this case proves no exception to the rule that the benign giant cell tumor never produces metastases. Here, the metastasizing tumor was not a giant cell tumor, but a malignant growth that developed out of a giant cell growth, as the result of various insults, in which curettage and imperfect irradiation probably played the chief part. Search of the literature seems to show that there is no satisfactory record of metastasis of a giant cell tumor in its original form. The occurrence of metastases in this case seems to stand as a somewhat hazardous feature of the usual surgical treatment of the benign giant cell tumor and as evidence in favor of the treatment by external radiation. The unfortunate outcome in this case suggests that the surgical plan of treatment, if adopted in these cases, should be adhered to, and that it is unwise to attempt to combine surgical methods with postoperative radiation by means of radium inserted in the tumor cavity.

Abscess of Frontal Lobe.—Kerr has analyzed 113 of these cases, and finds that 44 per cent., or nearly half of them, were not recognized until necropsy. It is evident that there is need of careful study of all cases in the hope of improving the diagnosis of frontal lobe abscess. This study includes six cases observed by Kerr.

Transfusion of Unmodified Blood.—While Brines would not recommend that the citrate method be abandoned, yet he advocates that the whole blood method should, whenever possible, be substituted for it; however, there is never a time when citrated blood is as good as whole blood. The Unger method seems to be the most simple and most generally successful for the giving of blood directly. This method insures promptness, as no time need be consumed by preliminary details or arrangements.

Empyema Necessitatis.—Tees describes some of the sequelae possible when a purulent pleural effusion has been allowed to take its own course. In the first case, an unrecognized empyema found its way through a weak spot in the upper anterior chest wall. In the second case, a massive empyema, commencing to point in a corresponding region, subsided after adequate drainage of the chest was established. In the third case, a fluctuating swelling in the chest wall arose from an old underlying empyema which had remained latent for four years. In the fourth case, with the history of a purulent effusion two and a half years previously, apparently cured, the diagnosis was established on the appearance of a superficial abscess at the site of the former rib resection. In connection with the last case, that of a basal empyema pointing in the loin, a detailed description is given of the anatomic relations which make this possible.

Deetherization by Means of Carbon Dioxid.—A study of forty cases by White has shown that the use of carbon dioxid to accelerate deetherization by stimulating respiration confers the following benefits: (*a*) the volume of respiration can be raised to any desired level; (*b*) recovery of consciousness is from three to five times more rapid; (*c*) blood pressure, circulation and color are materially improved; (*d*) nausea, vomiting and other subjective disagreeable sensations following ether anesthesia are reduced. Other indications for the use of carbon dioxid as a stimulus to respiration are: (*a*) in cases in which the respiratory center is depressed, not by the ether but by direct pressure or injury; for example, the above

mentioned cases of cerebellar tumor, brain abscess and fractured skull, in which carbon dioxid was the means of restoring normal respiratory function; (*b*) in the treatment of failing respiration during the period that ether is given. Whether this is due to a hypocapnea following a period of exaggerated breathing, or to an actual depression of the respiratory center by the ether, the findings in two cases suggest that carbon dioxid can restore normal respiration. In no instance have any signs of acidosis or other harmful effects attributable to carbon dioxid been noted.

Endothelioma of Spleen.—Smith and Rusk report two cases of primary endothelioma of the spleen arising from the endothelial cells of the sinuses. One hundred and four cases of malignant disease of the spleen were found reported in the literature. Lymphosarcoma is probably the most common type of tumor and is usually part of a generalized process which may appear simultaneously or later in other lymphoid tissues of the body. Exploratory laparotomy is justifiable in cases in which a well founded suspicion exists as to the presence of spleen tumors.

Arkansas Medical Society Journal, Little Rock

20: 75-84 (Sept.) 1923

Chronic Prostatitis. H. Fay, H. Jones, Little Rock.—p. 75.
*Hernia of Small Intestine Through Uterus. L. Kirby, Harrison.—p 79.

Hernia of Small Intestine Through Uterus.—Nothing is said by Kirby as to how the coil of intestine came to be in the uterus. The patient was not pregnant but was having irregular labor pains and had a slightly blood stained watery vaginal flow. The doctor in charge waited on the progress of labor for about ten hours, when he decided he could not prevent an abortion. He used a dilator until he could introduce his index finger into the uterus, when he felt a mass slightly elastic like a bag of waters. When he pulled the mass down into the vagina, he found it to be dark colored and congested; its walls thicker than a bag of waters. The mass was almost black in color and inelastic. Kirby twisted it off near the fundus uteri, introduced his finger into the uterus, and finding no indication of recent pregnancy, lightly packed the uterus with gauze. At operation the small intestines and omentum were found bound together, lying over the uterus, and attached to the right ovary and fallopian tube. Some of the adhesions were so firm they had to be cut and tied off. The small intestines were attached in a V shape to the upper and back part of the fundus uteri. The opening in the uterus was about one-half inch long.

Atlantic Medical Journal, Harrisburg, Pa.

26: 797-883 (Sept.) 1923

Early Diagnosis and Treatment of Malignant Disease of Larynx. F. O. Lewis, Philadelphia.—p. 797.
Medical Care of Dependent Children. H. H. Jenks, Philadelphia.—p. 799.
Preventable and Correctible Deformities of Childhood. E. W. Fiske, Pittsburgh.—p. 804.
Importance of Closer Obstetric and Pediatric Relations. J. K. Everhart, Pittsburgh.—p. 807.
Atypical Mastoiditis. M. S. Ersner, Philadelphia.—p. 811.
Value of Test Meal Studies. T. G. Schnabel, Philadelphia.—p. 819.
Some Neuro-ophthalmic Studies of War Injuries. H. W. Scarlett, Philadelphia.—p. 823.
Morbidity That Follows Prostatectomy. A. Randall, Philadelphia.—p. 827.
Voice Production. With Few Suggestions for Treating Hoarseness and Loss of Voice in Singers. R. F. Ridpath, Philadelphia.—p. 831.

Boston Medical and Surgical Journal

189: 425-456 (Sept. 27) 1923

*Acute Perforations of Stomach and Duodenum. C. L. Gibson, New York.—p. 425.
How Pathology Explains Clinical Symptoms Found in Ectopic Gestation. J. O. Polak, Brooklyn, N. Y.—p. 433.
Art and Science of Medicine. D. Gregg, Wellesley.—p. 438.
Modern Surgery of Prostate Gland. O. S. Lowsley, New York.—p. 441.

Acute Perforations of Stomach and Duodenum.—Seventy-six cases form the basis of Gibson's paper. A few facts emphasized are: (*a*) the relative immunity of women to acute perforations—only five out of seventy-six, four of these being gastric; (*b*) no patient under 20, the greatest number being between 30 and 40; (*c*) duodenal ulcer gives severer symptoms and a longer history; (*d*) the mortality of gastric ulcers is a little higher than that of duodenal ulcers, and (*e*) the occurrence of the ulcer in stomach and duodenum was the same—namely, thirty-eight each.

California State Journal of Medicine, San Francisco

21: 363-408 (Sept.) 1923

Graduate Instruction for Physicians in General Practice. T. C. Routley, Toronto.—p. 363.
Latent Stage of Gallstones and Its Early Recognition. H. Herbert, Los Angeles.—p. 366.
*Treatment of Ureter When Nephrectomy Is Done for Tuberculosis of Kidney. L. R. Reynolds, San Francisco.—p. 369.
Perineal and Suprapubic Prostatectomy and Choice of Operation in Types of Cases. R. V. Day, Los Angeles.—p. 371.
*Peritonsillar Abscess. Less Painful and More Efficient Method of Treatment. R. S. Irvine, San Francisco.—p. 373.
Radiotherapy of Tuberculous Lymph Nodes. P. H. Pierson, San Francisco.—p. 378.

Combined Ureterectomy and Nephrectomy.—In certain cases, even though the pathology of the ureter may not be entirely plain in the mind of the investigator, enough is certain to justify the operation of combined ureterectomy and nephrectomy. This was found to be true in cases reported by Reynolds and although not all were infected with tuberculosis, in each case the ureter was badly diseased and would undoubtedly have been the cause of a slowly healing sinus following nephrectomy. The combined operation recommended may be begun either on the kidney or the ureter, depending on the necessities of the particular case.

Treatment of Peritonsillar Abscess.—The method advocated by Irvine is as follows: The patient lies with face turned toward the affected side (if it be unilateral), a small mouth gag is placed between the teeth and complete anesthesia is induced. The anesthetic mask is then removed; the jaw is quickly opened by a mouth gag; the position and type of abscess are determined by palpation with the finger; a sponge holder is placed behind the swelling; blunt tonsil scissors, curved to a right angle, are passed between the tonsil and the anterior pillar and the abscess cavity is entered. The scissors blades are then opened as widely as necessary to evacuate the pus which is prevented from entering the larynx by the sponge and by the voluntary action of the patient, who by this time is sufficiently awake to clear the throat. If pus is not obtained at the point of entry of the scissors blade, it is proper to search with the blunt point until it is encountered. Tonsillectomy is performed two or three weeks later. The points of advantage claimed for this method are: (1) accurate localization of the abscess; (2) maximum safety and thoroughness in evacuation; (3) minimum damage to pillars and palate; (4) absence of pain during operation.

Canadian Medical Association Journal, Montreal

13: 627-702 (Sept.) 1923

Injuries to Forearm and Hand. J. A. Gunn.—p. 627.
Severe Industrial Injuries to Fingers and Their Treatment. C. L. Roman.—p. 633.
Retropharyngeal Abscess and Erosion of Internal Carotid Artery. D. E. S. Wishart.—p. 635.
Pathology of Endemic Goiter. J. Miller.—p. 642.
Some Unusual Feeding Cases. A. Goldbloom.—p. 646.
Results of Radium Treatment in Sarcoma. W. H. B. Aikins.—p. 654.
Medical Experiences Among Kwquithlih Indians Along Discovery Passage. B. C. W. F. Shaw.—p. 657.
Industrial Medicine. Its Motives and Merits. B. L. Wyatt.—p. 660.
Treatment of Bladder Tumors. R. Pearse.—p. 663.
Report of Epidemic of Typhoid Fever at Mansonville, Quebec. H. E. Gillanders.—p. 666.
Case of Streptococcus Viridans Bacteriemia with Endocarditis and Apparent Recovery. H. McPhedran.—p. 669.
Some Aspects of Experimental Pneumonia. A. Malloch.—p. 671.

Florida Medical Association Journal, St. Augustine and Jacksonville

10: 65-94 (Sept.) 1923

Diarrheas of Infancy. F. C. Moor, Tallahassee.—p. 65.
Safeguarding Prostatectomy. J. C. Vinson, Tampa.—p. 68.
Gastric and Duodenal Ulcers. P. C. Perry and H. L. Brillhart, Jacksonville.—p. 70.
Diagnostic Points of "Acute Abdomen." J. S. Turberville, Century.—p. 74.
Ectopic Beats, Their Significance and Treatment. E. W. Bitzer, Tampa.—p. 77.
Application of Diagnostic Methods. T. Z. Cason, Jacksonville.—p. 79.
Case of Myelogenous Leukemia. M. Freeman, Perrine.—p. 81.

Journal of Industrial Hygiene, Boston

5: 149-188 (Sept.) 1923

Undernourishment in Industry. II. W. H. Bunn, Youngstown, Ohio. —p. 149.
VI. Absorption of Lead by Upper Respiratory Passages. H. L. Blumgart, Boston.—p. 153.
Control and Prevention of Tetrachlorethane Poisoning. D. C. Parmenter, Boston.—p. 159.
Atmospheric Particulate Matter: II. Use of Electric Precipitation for Quantitative Determinations and Microscopy. P. Drinker, R. M. Thomson, and S. M. Fitchet, Boston.—p. 162.

Journal of Metabolic Research, Morristown, N. J.

3: 373-510 (March) 1923

*Amino-Acids in Nutrition. VI. Nature of Supplementary Value of Protein-Free Milk to Total Proteins of Milk. B. Sure, Fayetteville, Ark.—p. 373.
*Id. VII. Cause of Nutritive Inadequacy of Proteins of Georgia Velvet Bean (Stilzilobium Deeringianum). B. Sure, Fayetteville, Ark. —p. 383.
*Vitamin Potency of Cod Liver Oils. II. "Spring" Cod Liver Oil. A. D. Holmes, Boston.—p. 393.
*After-Effects of Prolonged Fasting on Basal Metabolism Rate. M. M. Kunde, Chicago.—p. 399.
*Physiologic Action of Saccharin. A. J. Carlson, C. J. Eldrige, H. P. Martin and F. L. Foran, Chicago.—p. 451.
Diet Treatment of Diabetes Insipidus. F. M. Allen and J. W. Sherrill, Morristown, N. J.—p. 479.

Supplementary Value of Protein-Free Milk.—Sure asserts that lactalbumin has no supplementary value to the casein in milk when the total proteins of milk are fed at a 10 per cent. level. Protein-free milk has a significant supplementary value to the total proteins of milk at a 10 per cent. plane of protein intake which may be attributed either to cystin or to some organic sulphur compound which the animal organism can readily transform into cystin. Protein-free milk also has additional supplementary value when introduced to the extent of 28 per cent. of the total ration by adding traces of tyrosin.

Indigestibility and Amino-Acid Deficiency of Proteins.—In addition to indigestibility, Sure says, amino-acid deficiency should be considered as another factor responsible for the nutritive inadequacy of the proteins in question, and that cystin is one of the amino-acids responsible for that deficiency.

Vitamin Potency of Cod Liver Oil.—Holmes' study shows that cod liver oils from emaciated fish may be highly potent in vitamin A, but cod liver oils obtained from plump cod fish have a higher vitamin potency than the oil obtained from emaciated fish.

Effect of Prolonged Fasting on Basal Metabolism.—A fast of forty-one days in dogs and fifteen days in man caused no appreciable lowering of the basal metabolic rate during the fasting period of Kunde's experiments. Dogs that had fasted until their initial body weights had been reduced 39 and 45 per cent. not only regained their normal weights, but gained weight on the same dietary which before fasting merely maintained their body weights constant. After the fast they maintained normal weight on a lower calory intake. This indicates a more economical use of the food. It is not due to decreased general activity. There is a temporary increase in the basal metabolic rate as an effect of prolonged fasting. This temporary increase seems to be proportional to the duration of the fast and loss in body weight. The increased oxygen consumption in dogs was most marked during the time that the body was undergoing rapid growth or gain in weight. The basal metabolic rate of female dogs during rut is normal or slightly lower than normal. The basal metabolic rate during the first four days of menstruation is usually slightly subnormal. There are indications of seasonal variations in the basal metabolic rate of man.

Physiologic Action of Saccharin.—The prevailing view that, except for its action on the organs of taste in the mouth, saccharin is an inert substance, having no action on organs and tissues, according to Carlson et al., is not tenable. Saccharin acting in the mouth decreases appetite, gastric secretion and peptic digestion. Acting in the small intestine, it decreases absorption. Acting on the erythrocytes, it decreases hemolysis. These actions of saccharin cannot be explained by the osmotic factor. Saccharin in the blood, in proportion to its concentration, passes into the lymph, cerebrospinal fluid, saliva, tears and mammary secretion.

Missouri State Medical Association Journal, St. Louis

20: 303-334 (Sept.) 1923

Insulin in Treatment of Diabetes Mellitus. F. Neuhoff, St. Louis.—p. 303.
Relation of Kidney Function Tests to Prognosis and Treatment of Hypertension. D. R. Black, Kansas City.—p. 306.
Diagnosis and Treatment of Exophthalmic Goiter. E. V. Mastin, St. Louis.—p. 311.
*Reduced Carbohydrate Tolerance: Its Possible Significance. G. H. Hoxie, Kansas City.—p. 316.
Hemangioma, with Calcification, Preoperative and Postoperative Roentgen-Ray Findings. H. J. Ravold, St. Joseph.—p. 318.
Recognition and Treatment of Postoperative Complications. F. W. Bailey, St. Louis.—p. 319.

Reduced Carbohydrate Tolerance.—Of 133 cases with a normal basal metabolism ratio, Hoxie found that the carbohydrate metabolism was normal in all but fifty-two. In the cases in which the basal metabolism ratio was above 10 per cent., the normals were 56 per cent. And in the thirty-four cases more than 10 per cent. below normal basal metabolism ratio, the carbohydrate metabolism was normal in eighteen. A rough analysis of cases showing a diabetic curve without glycosuria shows six cases due to focal infection, eight due to endocrin disorder, two due to exhaustion, and one frank diabetes. An analysis of the cases showing a glycosuria with a normal curve shows fourteen cases of focal infection, three of endocrin disorder, and nine of exhaustion. Hoxie calls attention to one factor that is so often present in these cases of reduced carbohydrate tolerance, and that is the factor of systemic exhaustion. This exhaustion may have resulted from sickness or from exertion or from one long continued monotonous activity. The results are the same, a lack of resilience in the bodily tissues. Such a depression of vital forces will show itself in glycosuria with or without the diabetic curve. The curve, however, becomes more and more diabetic the longer the condition persists.

Nebraska State Medical Journal, Norfolk

8: 301-340 (Sept.) 1923

Diagnosis and Treatment of Heart Disease. J. B. Herrick, Chicago.—p. 301.
Focal Infection in Neuropsychiatry. G. A. Young, Omaha.—p. 307.
Doctor's Relatives. L. Stark, Hartington.—p. 310.
Prevention and Cure of Pneumonia. F. A. Wells, Axtell.—p. 313.
Rational Treatment of Pneumonia. F. A. McGrew, Hastings.—p. 316.
Local Anesthesia. J. M. Willis, McCook.—p. 324.
Constipation in Children: Etiology and Treatment. E. S. Wegner, York.—p. 327.
Hemorrhage of New-Born. F. Clarke, Omaha.—p. 329.
Case of Megacolon. H. M. McClanahan, Omaha.—p. 331.

New Jersey Medical Society Journal, Orange

20: 289-324 (Sept.) 1923

Oration in Medicine. B. S. Pollak, Jersey City.—p. 289.
Oration in Surgery. S. G. Gant, New York.—p. 294.
The Doctor. J. Becton, Greenville, Texas.—p. 308.
*Case of Situs Inversus. F. H. von Hofe and C. D. Martinetti, Orange. —p. 312.
New Apparatus for Administration of Fluids. E. F. Lane, Brunswick. —p. 312.

Situs Inversus.—In Von Hofe's case the heart was on the right side, the liver on the left. The spleen was not palpable. The child was normal otherwise.

New York Medical Journal and Medical Record

118: 257-332 (Sept. 5) 1923

Medical Fakirs of Athens and Sexual Problems of Babylon in Days of Herodotus. J. Wright, Pleasantville, N. Y.—p. 257.
*Results Obtained by Various Methods in Treatment of Tumors of Bladder. H. H. Young and W. W. Scott, Baltimore.—p. 262.
Retention Neurosis of Bladder, Secondary to Postoperative Catheterization. V. C. Pedersen, New York.—p. 269.
Roentgen Ray and Radium Therapy of Hypertrophied Prostate. H. B. Philips, New York.—p. 272.
Prostatectomy. W. F. Burrows and E. C. Burrows, New York.—p. 276.
*Unsuspected Syphilis. L. Thompson, Hot Springs, Ark.—p. 277.
Results in Treatment of Syphilis F. L. Taylor, New York.—p. 281.
Surgical Kidney. S. W. Schapira, New York and J. Wittenberg, Brooklyn.—p. 284.
Gumma of Nasal Septum. E. M. Schwartz, New York.—p. 289.
Intravenous Administration of Iodids. F. J. Farnell, Providence, R. I. —p. 290.
Treatment of Gonorrheal Epididymitis with Intravenous Injections of Sodium Iodid. L. T. Wright, New York.—p. 292.
Chronic Gonorrhea of Prostate and Seminal Vesicles. W. H. Morton, New York.—p. 294.
Acute Gonorrhea. W. F. McKenna, Brooklyn.—p. 295.

When is Man Cured Who Has Had Gonorrhea? W. M. Brunet, Brooklyn.—p. 297.
Gonorrhea Treated by Infra-Red Light. W. D. Chesney, Chicago.—p. 300.
Unilateral Bifid Ureter, with Duplicate Ureter and Ureterocele on Opposite Side. F. A. Roberts, Newark, N. J.—p. 302.
*Unusual Case of Stone in Bladder. H. Hallarman, New York.—p. 305.
Treatment of Syphilis with Massive Doses of Mercury Intravenously. R. A. Ireland, Charleston, W. Va.—p. 320.
Salts of Bismuth in Syphilis. B. Sherwood-Dunn, Nice, France.—p. 321.
Untoward Results of Intravenous Injection of Sodium Iodid. L. Isacson, Sioux City, Iowa.—p. 322.

Results of Treatment of Bladder Tumors.—A review of the 380 cases which form the basis of the report made by Young and Scott shows that about 80 per cent. of bladder tumors occur between 40 and 69 years of age, being about equally distributed in these three decades. Both papilloma and carcinoma are much more frequent in the region of the trigone and ureteral orfices and adjacent lateral walls of the bladder and the vesical neck. The anterior wall is less frequently involved and the vertex and upper posterior wall are much more rarely involved. The vertex, anterior, upper lateral and posterior walls are most suitable for resection, and excellent results may be expected by radical removal of a wide margin of bladder wall, but good results may be obtained by resection in the base of the bladder and region of ureters. When the vesical neck and prostate are involved, deep cauterization is far more effective than excision. Fulguration is the method of choice in benign papilloma, but in large tumors radium is of great assistance in causing a rapid disappearance of the tumor, and, owing to the potential malignancy of all vesical papillomata, radium should generally be applied, if possible. In malignant papilloma radium, applied with an operative cystoscope and held firmly in position with clamp fastened to the table, is of first value and gives more brilliant results. Here, again, the conjoint use of fulguration and radium is advisable. The same treatment is sometimes completely effective in papillary carcinoma, and four small and two large tumors of this type and one small infiltrating cancer have been apparently cured by it. When the tumor is definitely malignant or very extensive, and particularly if infiltrating, it should be attacked suprapubically, great care being taken not to touch the tumor or break off any papillary processes; and alcohol or resorcin, 20 per cent., is applied to destroy any that may have dropped into the bladder or wound. If resection can be carried out successfully with a wide area of healthy bladder wall, whether extraperitoneal or transperitoneal or with transplantation of a ureter, it should usually be done, but the operation should not be so extravagantly extensive as to face a very high mortality rate. The position of radium implantation is still sub judice.

Syphilis.—Thompson pleads that all examinations be so conducted that the existence of syphilis will never be overlooked. He offers the following epigram: "Let syphilis be the lodestone of your diagnosis, the polar star of your suspicions, for this ubiquitous disease may mimic any known malady, may attack the prince and the pauper alike, and may invade any tissues or any organ of the body."

Stone in Bladder with Hairpin Nucleus.—Having been refused a life insurance policy because "of something wrong in her urine," a woman, aged 23, consulted Hallermann. On vaginal examination, a hard mass could be felt through the anterior wall of the vagina and on bimanual examination it felt as if it was in the bladder. A cystoscopic and radiologic examination corroborated the diagnosis, but it also showed a hairpin running through the center of the calculus. The calculus had formed around the ends of the pin, resembling a huge bicuspid tooth, the head of the pin projecting free for a distance of 1.5 cm. The whole stone was 8.5 cm. long, 3 cm. in circumference and 2.5 cm. at the points. Chemically, it consisted of natural calcium phosphate and calcium oxalate.

New York State Journal of Medicine

23: 359-396 (Sept.) 1923

Ankylosis: Treatment by Arthroplasty. W. R. MacAusland, Boston.—p. 361.
Normal Blind Spot. S. B. Marlow, Syracuse.—p. 369.
Factors Concerned in Production of Lesions of Eye in Experimental Syphilis. W. H. Brown and L. Pearce, New York.—p. 376.
Surgical Results from Operation for Convergence Strabismus. J. W. White, New York.—p. 380.
Evulsion of Optic Nerve. Report of Case. L. W. Crigler, New York.—p. 382.
Renal Infections Complicating Pregnancy. H. G. Bugbee, New York.—p. 385.

Southwestern Medicine, Phoenix, Ariz.

7: 313-350 (Sept.) 1923

Insulin in Treatment of Diabetes. F. M. Allen, Morristown, N. J.—p. 313.
Id. J. A. Buchanan, Pueblo, Colo.—p. 322.
Radiation of Female Pelvis in Nonmalignant Diseases. J. W. Cathcart, El Paso, Texas.—p. 327.
Central Nervous System Disease Associated with Pernicious Anemia. C. W. Mills, Tucson.—p. 330.

Surgery, Gynecology and Obstetrics, Chicago

37: 255-308 (Sept.) 1923

*Mobilization of Ankylosed Joints. W. R. MacAusland, Boston.—p. 255.
Arthroplasty. P. Santy, Lyon, France.—p. 310.
*Serotherapy and Vaccinotherapy in Surgical Infections. L. Bazy, Paris, France.—p. 320.
Electrochemical Interpretation of Shock and Exhaustion. G. W. Crile, Cleveland.—p. 342.
*Experiments on Infectious Origin of Thrombo-Angiitis Obliterans and Isolation of Specific Organism from Blood Stream. H. M. Rabinowitz, Brooklyn.—p. 353.
I. Fibromyona of Epididymis. II. Paraffinoma of Peritesticular Tissues. J. S. Eisenstaedt, Chicago.—p. 361.
Etiology (Congenital) and Importance of Cystico-Duodenocolic Fold. G. W. Nagel, Rochester, Minn.—p. 365.
Torsion of Spermatic Cord with Gangrene of Testicle: Report of Two Cases. H. W. McKay, Charlotte, N. C.—p. 373.
Dynamic Ileus and Its Causative Factors. F. D. Moore, Chicago.—p. 375.
Ovarian Hematomata. Two Cases. E. M. Blair, Vancouver, B. C.—p. 379.
Epithelization of Maxillary Sinus in Chronically Diseased States. J. E. Sheehan, New York.—p. 384.
*Sharp and Sterile Scalpel. W. W. Babcock, Philadelphia.—p. 389.
"Thermostatic Drip" Apparatus. J. Buckstein, New York.—p. 390.
Case of Diverticulum of Posterior Urethra with Stone. C. P. Howze, Charlottesville, Va., and R. A. Hennessey, Memphis, Tenn.—p. 392.

Mobilization of Ankylosed Joints.—MacAusland reviews the whole subject of arthroplasty as applied to the elbow, hip and knee and stressed these important points: (1) That excision of a joint does not constitute an arthroplasty; (2) that highly developed technical skill is absolutely necessary; (3) that judgment in the selection of cases is very difficult. The paper is long and detailed.

Serotherapy in Surgical Infections.—The various phases of this therapy, theoretical as well as practical, are reviewed by Bazy who is their ardent advocate. He says that surgeons attach great importance to the study of indications for operation. The same sensible course must be followed in serotherapy and vaccinotherapy. The rational use of serotherapy or vaccinotherapy is dominated by the fundamental conception of specificity. Besides, their specific action, serums, like vaccines, have a paraspecific action (colloidal therapy, peptonic action) which it may sometimes be convenient to utilize when the germ of the disease under treatment is not known, or if there is no specific medicine for the germ. In the cure of infections, the first place must be given to specific serotherapy. Bazy insists on the importance of the employment of local serotherapy whenever it is possible.

Infectious Origin of Thrombo-Angiitis Obliterans.—The bacillus isolated by Rabinowitz produced the same lesion in the ears and feet of the rabbit as that which was present in the calf of the leg of the human being. The lesions produced were similar in their gross and microscopic pathology to that produced in the disease known as thromboangiitis obliterans. This bacillus was isolated both from the blood of the local affected portion and from the general blood stream. The organism was distinctly hemoglobinophilic.

Sharp and Sterile Scalpel.—Babcock submerges the scalpel blades in a protective noncorrosive solution and places them in the sterilizer to boil with the other instruments. Knife blades that have been continuously in the solution for more than five years remain bright and sharp and repeated or long continued boiling has little appreciable influence on the cutting edge of instruments covered by the liquid. The solution is miscible with water and is readily rinsed from the instruments. It consists of liquor cresolis compositus, 5 parts and pure glycerin, 95 parts.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

4: 177-240 (Aug.) 1923

*Etiology of Rickets. II. D. N. Paton and A. Watson.—p. 177.
*Experiments on Respiration of Malignant Tissues. G. Ahlgreen.—p. 196.
Rate and Progress of Bacteriophage Action. E. H. Lepper.—p. 204.
*Studies in Experimental Tetany: I. Distribution of Calcium. II. Colloidal and Ionic Calcium. E. W. H. Cruickshank.—p. 213.
*Expression of Results of Wassermann Reaction in Units. J. McIntosh and A. N. Kingsbury.—p. 224.
Autodissociation of Agglutinin-Antigen Complex. T. G. M. Hine.—p. 231.
*Complement Fixation Test in Diagnosis of Gonococcal Infection in Women. E. M. Martland.—p. 235.

Etiology of Rickets.—In experiments reported by Paton and Watson a limitation of the supply of calcium proved to be of more importance in determining the onset of rickets then the limitation of vitamin A. A very restricted supply of calcium, although leading to changes in the bones, chemically and structurally resembling those found in rickets, did not materially reduce the calcium of the blood and muscles, or the inorganic phosphorus content of the blood. The retention of phosphorus appeared to be determined by the retention of the calcium. The percentage of the calcium retained did not vary very markedly with the amount in the food, within the limits investigated from 0.02 to 0.198 gm. calcium oxid per kilogram. The very high percentage retention of lime in the calcium-poor diet makes it difficult to explain the favorable action of cod liver oil on the retention. A comparison of the condition of puppies exposed to sunlight through glass with those from which direct sunlight was excluded showed that the latter condition favored the onset of rickets, but whether it was associated with the lethargy manifested by these puppies is not indicated. The addition of olive oil to a diet which was adequate to prevent rickets actually favored its onset. Cod liver oil exercised a marked effect in favoring the cure of rickets in puppies. The addition of feces from cases of infantile rickets to the diets of puppies, whether on a diet of full cream, milk and bread, or on a diet of separated milk and bread, was not followed by a development of rickets. The injection of blood from cases of active infantile rickets did not produce the condition in puppies on a diet of full cream, milk and bread. While these experiments give no support to the theory that rickets is an infective disease, they do not disprove the possibility that a particular condition of the intestinal flora, which might be propagated by fecal infection, may so modify the absorption of calcium and phosphorus as to lead to rachitic changes.

Respiration of Malignant Tissue.—When studying tumor respiration Ahlgreen says one has not hitherto sufficiently considered either the hydrogen ion concentration or the supply of combustible matter in the tissue the respiration of which is to be tested. The importance of these factors is now made evident. The hydrogen ion concentration should be maintained at the normal blood reaction by a sufficiently powerful buffer substance, preferably by potassium phosphate. To estimate the respiration intensity there must be a sufficient quantity present not only of oxygen (or of some other hydrogen acceptor), but also of a combustible matter, this being consumed without replacement when the tissue is removed from the organism. This is suitably done by adding succinic acid or glycerophosphoric acid, or both simultaneously.

Experimental Tetany; Distribution of Calcium.—The calcium content of 100 c.c. of normal blood amounts to the following average figures: Total 9.12 mg., plasma 8.11 mg., cells 1.10 mg. In tetany, Cruickshank points out, these drop to the average figures: whole blood 5.7 mg., plasma 5.26, and cells 0.46. These figures show a loss of calcium amounting to 27.2 per cent. for whole blood, to 54.4 per cent. for cells, and to 35.2 per cent. for the plasma. Diffusible calcium in normal serum averages from 60 to 70 per cent., while in severe parathyroid tetany it amounts to 94 per cent. of the total calcium. While there is an immediate state of alkalosis following parathyroidectomy, this condition is not necessarily marked, and with the development of the signs of severe tetany it passes rapidly into a condition of acidosis, as shown by a steadily falling p_H of the blood. The immediate relief of the condition consequent on the withdrawal of from 70 to 100 c.c. of blood is indicative of a toxic causative factor. The calcium deficiency and the great loss of colloidal calcium, Cruickshank suggests, are probably indicative of a rapid protein disintegration.

Expression of Results of Wassermann Reaction in Units.—A unit system for the expression of Wassermann results is described by McIntosh and Kingsbury. The method is applicable to any technic of carrying out the Wassermann test by reducing the number of minimum hemolytic doses of complement fixed to the required minimum hemolytic doses for a 5 per cent. suspension of sheep cells, and multiplying this result by the reciprocal of the quantity in cubic centimeters of serum employed.

Complement Fixation Test in Diagnosis of Gonorrhea.—Of seventy-nine cases regarded as genuine gonococcal infections in which Martland did a complement-fixation test, fifty-eight gave a positive result. Of these, however, fifty-five deviated no more than 1 minimum hemolytic dose of complement; twenty-six completely and twenty-nine partially, using antigen A; and twenty-one completely and thirty-four partially, using antigen B. Of the remaining three cases, two deviated 2 minimum hemolytic doses complement completely; on showed complete deviation on two occasions with 4 minimum hemolytic doses. These results establish the fact that a certain degree of deviation is produced in the majority—73 per cent.—of cases regarded as gonococcal, deviation being most constantly shown, as might be expected, in those cases in which infection is of some weeks' standing, and particularly when the disease has passed beyond the purely local stage.

British Journal of Medical Psychology, London

3: 153-266 (Aug.) 1923

Delinquency and Mental Defect. W. N. East.—p. 153.
Id. C. Burt.—p. 168.
Id. F. C. Shrubsall.—p. 179.
Id. W. H. B. Stoddart.—p. 188.
Nature of Autosuggestion. E. Jones.—p. 194.
Relation of Analytical Psychology to Poetic Art. C. G. Jung.—p. 213.

Edinburgh Medical Journal

30: 385-420 (Sept.) 1923

*Paralysis of Pott's Disease. Operation for Its Relief. J. Fraser.—p. 385.
Medicina Antiqua. W. G. A. Robertson.—p. 393.
Surgical Treatment of Embolism of Extremities. J. N. J. Hartley.—p. 408.

Operation to Relieve Paralysis Following Pott's Disease.—The operation devised by Fraser has been undertaken to relieve those cases of paralysis secondary to Pott's disease which have failed to respond to conservative treatment. A thorough trial is given to conservative measures, but, if no success is obtained, the paralysis is becoming more extensive, and there is danger of the cord degenerating, resort is had to operation. The operation entails division of the laminae of the affected vertebrae and of one or two laminae above and below the site of the lesion. Fraser asserts that the operation is invariably followed by early and progressive improvement in the paralysis, and, if care is continually exercised in regard to postoperative rest, recovery is complete and permanent. No weakening of the spine follows the operation. This report is based on the records of four cases, in all of which the operation was successful, though in one instance want of care in postoperative treatment resulted in a temporary relapse. The outstanding advantage of the operation is that it appears to relieve the spinal pressure that is maintaining the long standing paralysis, and which, if unrelieved, may result in spinal cord degeneration.

Journal of Laryngology and Otology, Edinburgh

38: 405-460 (Aug.) 1923

Physical Measurements of Minimum Audibility. J. P. Minton and J. G. Wilson.—p. 405.
Acusticus Tumors. F. M. R. Walshe.—p. 419.
Morbid Anatomy and Drainage of Otitic Meningitis. E. D. D. Davis.—p. 427.

38: 461-512 (Sept.) 1923

Lye Strictures of Esophagus. R. M. Kinney.—p. 461.
Lingual Tonsil. J. A. Jones.—p. 465.
Method of Applying Epithelial Grafts to Mastoid Cavity. A. Campbell.—p. 471.
Cysts of Larynx. E. D. D. Davis.—p. 473.
Injury to Larynx Induced by Roentgen-Ray Treatment. A. Van Rossem.—p. 477.

Journal of Physiology, London

57: 337-466 (Aug.) 1923

Effects of Speed on Mechanical Efficiency of Human Muscular Movement. H. Lupton.—p. 337.
*Respiratory Centers. T. Lumsden.—p. 354.
*Pulmonary Edema and Congestion in Heart-Lung Preparation. D. T. Barry.—p. 368.
Humoral Transmission of Excitation on Stimulating Vagus and Sympathetic Nerves of Frog's Heart. R. Brinkman and E. Van Dam.—p. 379.
*Carbon Dioxid Tension and Oxygen Consumption During Artificial Respiration, Acidosis and Alkalosis. J. A. Campbell.—p. 386.
Epinephrin and Vagal Types of Apnea. J. Mellanby and A. St. G. Huggett.—p. 395.
*Action of Vasoconstrictor Substances on Arteries of Brain. F. Roberts.—p. 405.
Activity of Golgi Apparatus in Neurones of Helix Aspersa. F. W. R. Brambell.—p. 415.
*Function of Tubules in Kidney Excretion. E. B. Mayrs.—p. 422.
Antidromic Action. I. J. N. Langley.—p. 428.
Effect of Insulin on Blood Phosphate. V. B. Wigglesworth, C. E. Woodrow, W. Smith and L. B. Winter.—p. 447.
*Relative Importance of Factors Concerned in Formation of Urine. N. B. Dreyer and E. B. Verney.—p. 451.
Influence of Oxygen Supply on Response of Isolated Intestine to Drugs. L. Gross and A. J. Clark.—p. 457.
*Action of Phlorizin on Kidney. E. B. Mayrs.—p. 461.

Location of Respiration Centers.—Rhythmical respiration in the cat and probably in all mammals, Lumsden asserts, is managed by an inspiratory mechanism, the apneic center at the level of the striae acousticae; by an expiratory center just below this level; and both these centers are controlled by a higher center, pneumotaxic center, in the upper half of the pons. The gasping center near the apex of the calamus scriptorius is probably a relic of some previous respiratory mechanism and does not appear to influence true rhythmical breathing of normal type, although it may or may not be a relay in the tract of apneic impulses to the inspiratory muscles.

Pulmonary Edema and Congestion.—In experiments on the heart-lung preparation Barry found that edema of the lung clears up to a varying extent when the colloid osmotic pressure of the blood is raised by a 10 per cent. gum solution. In some instances this was given in hypertonic saline solution. The use of gum clinically for this object seems to be indicated by these experiments.

Effects of Artificial Respiration.—Campbell asserts that artificial respiration decreases the carbon dioxid tension throughout the body, the lowest figures obtained being 21 mm. under the skin, 12 in the abdominal cavity and 7.5 in the arterial blood. Artificial respiration increased the oxygen consumption, the body cells attempting to replace the carbon dioxid pumped out. Artificial respiration decreases the glycogen content of the liver. Sodium bicarbonate injected intravenously increases, whereas hydrochloric acid decreases the oxygen consumption and carbon dioxid production independently of the respiratory center.

Action of Vasoconstrictor Substances on Brain Arteries.—The three vasoconstrictor substances tested by Roberts, pituitary extract, ergotoxin and barium chlorid, all caused diminution or complete stoppage of respiration. Since this effect occurs when the blood pressure is prevented from rising, it must be referred to anemia of the respiratory center by cerebral vasoconstriction. In the rabbit, pituitary extract causes two periods of apnea. Of these the second is proved to be related to cerebral vasoconstriction. Reasons are given for believing that the first is due to a similar cause. The second apnea is sometimes followed by Cheyne-Stokes respiration, the periods of which are related to changes in blood pressure. The fact that these substances all resemble epinephrin in their effect on respiration and especially the close similarity which exists between pituitary extract and epinephrin is confirmatory evidence for the view already expressed that epinephrin is vasoconstictor to the brain.

Function of Kidney Tubules.—No intracellular concentration has been found by Mayrs to occur during excretion of urea and sulphate by the kidney. Evidence obtained by other observers that phenolsulphonephthalein is secreted shows that concentration of the dye takes place in the renal cells. It is, therefore, concluded that urea and sulphate are eliminated by a process other than secretion; and, in view of the relatively small increases in concentration which occur in excretion of waste products as compared to dyes, this conclusion is extended to the urine as a whole. The conception of renal activity which justifies the employment of dyes in efficiency tests is probably erroneous.

Factors Causing Flow of Urine.—Dreyer and Verney present evidence to show that changes in the rate of urine secretion are determined primarily by changes in the height of the blood pressure and not by the velocity of blood flow when the composition of the blood remains unaltered. Changes in the composition of the blood are also preeminently important in this direction when the blood pressure remains constant, being often unaccompanied by any change in the velocity of blood flow. The authors, therefore, conclude that the two physicochemical factors which are of primary importance in the causation of the flow of urine are (*a*) the height of the arterial blood pressure and (*b*) the chemical composition of the blood. Blood flow is a necessary accompaniment of secretion but is not to be regarded as a cause per se.

Action of Phlorizin on Kidney.—All the results obtained by Mayrs are in accord with the absorption theory of the excretion of urine.

Journal of Tropical Medicine and Hygiene, London

26: 273-284 (Sept. 1) 1923

Practical Parasitology in South China. E. C. Faust.—p. 273.
Colombo Drainage. R. E. Tickell.—p. 275.

Lancet, London

2: 493-540 (Sept. 8) 1923

*Extrasensorial Channels of Knowledge. C. Richet.—p. 493.
Two Cases of Actinomycosis Subsequent to Extraction of Teeth. W. T. Warwick.—p. 497.
Outbreak of Acute Goiter in Children's Home. E. W. Adams and H. N. Crossley.—p. 501.
*Causes of Headache. A. B. Pavey-Smith.—p. 503.
*Treatment of Scarlet Fever by Eucalyptus Oil and Phenolated Oil Versus Isolation. G. Gushue-Taylor.—p. 505.
*Gastroduodenostomy versus Gastro-Enterostomy in Treatment of Chronic Duodenal Ulcer. E. R. Flint.—p. 508.
Case of Acute Myelitis, with Recovery. F. J. Jauch.—p. 510.
*Unusual Case of Chickenpox. H. C. Pattin.—p. 510.
Three Cases of Scurvy. R. H. Norgate.—p. 511.

Extrasensorial Channels of Knowledge.—The thesis which Richet sustains and tries to prove by experiment is that a knowledge of reality may be obtained by means other than by the ordinary channels of the senses. He says: "Every one knows that the external world is accessible to us by our senses, by vision, hearing, and touch, and to a less extent by smell and taste. No other ways are known. It is the universal opinion that we can have no other notion of the reality that surrounds us except through our five senses, and that any fact must remain forever unknown unless sight, touch, or vision has revealed it to us. This is the classic and at the same time popular idea. It is formal and exclusive, without itself ever having been demonstrated. To admit that a knowledge of occurrences can arrive at our consciousness by any other means than those of the senses, is a daring and revolutionary proceeding, and yet this is the thesis that I am about to maintain." Richet proposes to call this new science metapsychics. He divides it into two distinct groups: (1) subjective metapsychics, which deals only with the phenomena of consciousness, and (2) objective metapsychics, dealing with the external phenomena which are not explicable by the ordinary laws of mechanics. Much of this discussion concerns second sight, clairvoyance, cryptesthesia, hypnotism, etc., as means of acquiring knowledge.

Classification of Headaches.—The classification of headache in most works of reference is entirely unsatisfactory to Pavey-Smith. He suggests a different classification, dividing headache into three main groups, as follows: 1. Intracranial, due to actual processes occurring within the cranial cavity. 2. Cranial, due to processes affecting the cranial walls and the air spaces contained within them. 3. Extracranial, due to

processes affecting structures outside the cranial walls. By "process" is meant the actual organic condition directly responsible for the head pain. Thus, in an intracranial headache (Group 1) the pain arises as a result of some intracranial change. This intracranial change may itself be due to some extracranial and more general condition, but the headache is only "extracranial" if the actual pain causing lesion is outside the skull. These groups, in fact, refer to the starting point of pain, and not to the condition with which that pain is associated. In supra-orbital neuralgia (Group 3, extracranial) the patient complains of a pain which shoots upward into the forehead, and the maximum tenderness will be found over the nerve. Pressure near the supra-orbital notch will increase the severity and area of the pain. In frontal sinus headache (Group 2, cranial) the pain is fixed, dull, and may be throbbing; the maximum tenderness is usually on the floor of the sinus under the inner third of the supra-orbital margin. Superficial tenderness is not so marked, and pressure over the supra-orbital notch has no definite effect. In supra-orbital headache of intracranial origin (Group 1) there is no tenderness, though there may be hyperesthesia to finer skin tests. That is what the author believes to be the "anatomy of headache." It does not rest on definitely proved facts, but it is put forward as a useful working hypothesis.

Isolation of Prime Importance in Treatment of Scarlet Fever.—The use of eucalyptus oil applied to the skin and of phenolated oil to the throat in the treatment of scarlet fever, according to Gushue-Taylor, (*a*) does not prevent the occurrence of return cases; (*b*) does not prevent the infection spreading to susceptible patients and attendants during the course of treatment, and (*c*) does not prevent secondary complications. The number of return cases varies inversely as the length of the period of detention, when this period is up to about eight weeks. The author advises that all cases of scarlet fever should be isolated for at least eight weeks. They should not be allowed to mingle with other children until the ear, nose and throat appear healthy.

Gastroduodenostomy Operation of Choice for Chronic Duodenal Ulcer.—Flint thinks that gastroduodenostomy will be possible in 90 per cent. or more of cases of duodenal ulcer, and that consequently gastro-enterostomy will only need to be performed in less than 10 per cent. It can be performed in nearly every instance, and with no more risk to the patient than that attached to gastro-enterostomy. No case has been reported of the occurrence of an ulcer at the line of the anastomosis after gastroduodenostomy; this complication occurs in at least 2 per cent. of cases after gastro-enterostomy. It is so unlikely that an ulcer will ever be seen at the anastomotic line after gastroduodenostomy that when Flint has a gastrojejunal or jejunal ulcer to deal with, he excises it, sutures the openings in the stomach and jejunum, and does a gastroduodenostomy.

Chickenpox Eruption Influenced by Previous Exposure to Sun.—While there was a generalized distribution of rash in Pattin's case it was most abundant on the face, forearms, hands, legs and feet, and occurred on the plantar surface of the latter; it appeared on the flexor as well as extensor surfaces, and was, in places, almost confluent. The explanation arrived at respecting the unusual distribution of the eruption was that the sun's heat to which the girl had been exposed four days previously had given rise to heat erythema of the exposed parts, and that this accidental superficial irritation had determined the profuse character of the subsequent eruption.

Medical Journal of Australia, Sydney

2: 161-178 (Aug. 18) 1923

Some Child Welfare Centers in Great Britain, Their Methods and Results. R. H. M. Jull.—p. 161.
Recent Investigations in Growth of Bones in Infancy. E. J. Dalyeli.—p. 166.
Fracture Dislocation of Cervical Vertebrae. G. Bell.—p. 172.
Full Term Extra-Uterine Gestation: Anencephalic Monster. H. O. Lethbridge.—p. 172.

2: 189-216 (Aug. 25) 1923

*Modified Method for Manufacture of Insulin. T. B. Robertson and A. B. Anderson.—p. 189.
Absence of Direct Effect of "Insulin" on Oxidation of Diacetic Acid in Mice. T. B. Robertson.—p. 191.
Treatment of Diabetes by Insulin. C. T. C. de Crespigny.—p. 193.
Defects in Foot That Cause Disability. W. K. Hughes.—p. 199.

Modified Method for Manufacture of Insulin.—Robertson and Anderson add to the extract containing 50 per cent. of alcohol a sufficient amount of anhydrous sodium sulphate or of the exsiccated sulphate ($Na_2SO_4.H_2O$) to remove four-fifths of the water, rendering the alcoholic concentration a little over 80 per cent., as in Collip's method, but in a much smaller volume of fluid, so that much less time is consumed in distillation and rectification of recovered distillates and much less alcohol is wasted. The sodium sulphate can be recovered completely by ignition and can be employed for the same purpose again. The further stages of the process closely resemble those which are now employed at Toronto. A considerable saving of time and reagents is thus effected and the yield of insulin which is obtained compares favorably with that obtained by other more expensive methods.

Medical Journal of South Africa, Johannesburg

19: 1-32 (Aug.) 1923

Johannesburg Municipal Venereal Clinic. H. Gluckman.—p. 1.
Symposium on Cerebrospinal Meningitis. S. Lister.—p. 13.
Clinical Picture and Diagnosis. A. Bloom.—p. 16.
Serum Treatment of Cerebrospinal Fever. A. I. Girdwood.—p. 17.
Insulin: Study in Practical Ethics. C. L. L.—p. 23.

Sei-I-Kwai Medical Journal, Tokyo

42: 1-16 (Aug.) 1923

*Metabolic Changes in Experimental Tetany. T. Togawa.—p. 1.
Bacteriologic Investigation on Rice, Wheat and Barley Juice Culture Medium. S. Otabe.—p. 12.
*Appearance of "Plasma Cells" in Various Organs in Infectious Diseases. R. Hagiwara.—p. 13.
Experimental Study of Bacillus Coli Infection in Kidney. Y. Matsuyama.—p. 15.

Metabolic Changes in Experimental Tetany.—Togawa studied the carbon dioxid combining power of the blood plasma, the antitryptic power and the nonprotein nitrogen content of the serum in cases of experimental tetany on dogs. In parathyroidectomized dogs, showing typical tetanic symptoms, acidosis was always observed. The antitryptic power and the nonprotein nitrogen content of blood serum were usually increased. In thyroidectomized dogs showing no tetanic symptoms acidosis was never observed. A slight alkalosis condition, on the contrary, was sometimes induced. The antitryptic power and the nonprotein nitrogen content of the blood serum remained almost unchanged.

Plasma Cells in Infectious Diseases.—Hagiwara studied the plasma cells in cases of scarlet fever, streptococcemia, measles, diphtheria and whooping cough. They were present in chronic, subacute and acute infectious diseases, especially in the spleen, lymph glands, tonsil, heart, kidney and uterus, etc. The function of the plasma cell seems to be to resorb the destructive tissue in the body and to play some rôle against tissue obstruction. The localization of the cell is limited to the interstitial tissue, especially, around the blood vessels; never inside.

South African Medical Record, Cape Town

21: 365-388 (Aug. 25) 1923

Visceroptosis. A. Radford.—p. 367.
Spinal and Local Anesthesia. A. Frew.—p. 371.
Nasal Administration of Nitrous Oxid and Oxygen in Dental Surgery. R. M. Muir.—p. 373.
History of Cape Town Hospitals. C. C. Elliott.—p. 377.

Tubercle, London

6: 529-576 (Sept.) 1923

*Bodily Temperature in Health and in Pulmonary Tuberculosis. C. G. R. Goodwin.—p. 529.
Induction of Artificial Pneumothorax with Use of Differential Double Manometers. H. DeC. Woodcock and Z. P. Fernandez.—p. 542.
Domiciliary Treatment of Oseo-Articular Tubercle. W. C. Rivers.—p. 546.

Temperature in Tuberculosis.—The points brought out by Goodwin are: (*a*) for tuberculosis work the rectal method of recording the temperature is the most efficient; (*b*) as the pivot of successful treatment is keeping the patient at complete rest when fever is present, the rectal temperature should be employed in all antituberculosis schemes, so that even

slight degrees of pyrexia may not be missed, and (*c*) temperature records should be employed to a greater extent than seems general in the diagnosis, prognosis and treatment of pulmonary tuberculosis.

Archives des Maladies de l'App. Digestif, Paris

13: 625-728 (July) 1923

*Ulcers of the Lesser Curvature. L. Christophe.—p. 625.

Ulcers of the Lesser Curvature.—Christophe analyzes and discusses the results of different methods of operative treatment in thirty-eight cases of ulcers of the lesser curvature. His method of choice is the annular excision. His cases are described in detail with twenty-six illustrations. The operations date from the years 1907 to 1921. Nearly all the patients were reexamined recently, and the perfect results after annular resection were confirmed anew, he says.

Encéphale, Paris

18: 353-416 (June) 1923

*Serous Meningitis and Cerebral Tumor. H. Claude and H. Schœffer.—p. 353.
Mental Disturbance with Pituitary Tumors. Sainton and Péron.—p. 358.
Presenile Deliriant Psychosis. Halberstadt.—p. 369.
Treatment in Acute Febrile Psychoses. Damaye and Pélawsky.—p. 378.
Associated Cerebellar and Parkinsonian Syndromes. Vullien and Nayrac.—p. 381.
Perforating Ulcer in the Mouth in Case of Tabes Involving Only the Cranial Nerves. Desforges and Baruk.—p. 386.

Serous Meningitis Versus Brain Tumor.—The diagnosis of the cause of intracranial hypertension, in the absence of signs of localization, is always difficult. This syndrome often arises from a cerebral tumor but sometimes it is connected with serous meningitis or ependymitis. In the case cited by Claude and Schœffer there was serous meningitis, but necropsy disclosed a small intracranial fibroma. In this case, as frequently occurs in syndromes of hypertension, glandular disturbances were present; dysmenorrhea, mammary hypersecretion, marked obesity, etc. Compression of the pituitary would formerly have seemed sufficient reason for these symptoms. But today it would be pertinent to inquire whether these symptoms were not due rather to the distention of the floor of the third ventricle, and the centers of the infundibulum. However, disturbance of the pituitary function resulting from compression should not be overlooked as a possible etiologic factor in glandular irregularities.

Gynécologie et Obstétrique, Paris

8: 101-254 (Aug.) 1923

*Retrodisplacement of Nongravid Uterus. H. Henneberg.—p. 101.
*Idem. R. Proust.—p. 123.
*Pregnancy and Pulmonary Tuberculosis. M. Voron.—p. 141.
*Idem. A. Weymeersch and E. Olbrechts.—p. 172.
Anesthesia Procedures in Obstetrics. O. J. Rapin.—p. 211.
Idem. in Gynecology. Schickelé.—p. 234.

Retrodeviation of Nongravid Uterus.—Henneberg summarizes the views of modern gynecologists, including Stacy's article in THE JOURNAL, Sept. 2, 1922, p. 793. Movable backward displacement that does not cause pain needs no treatment. When there is pain, and it ceases as the uterus is restored to place, surgical intervention should be considered, otherwise not, as the pain is due to other causes, possibly anemia, chlorosis, hysteroneurasthenia or ptosis of the stomach, liver or bowel. Persistent sterility, repeated abortions (if syphilis is excluded), are further indications, as is also the slightest tendency to prolapse.

Technic for Surgical Treatment of Retroversion of the Nongravid Uterus.—Proust advocates Doléris' procedure as modified by Gosset for the majority of cases. In addition, if Douglas' pouch is abnormally large, it should be obliterated by Marion's method. If the woman is still in the reproductive age, this should be the rule even with the uterus not movable. If there is no question of future pregnancies, direct fixation is preferable, and for this he commends Terrier's procedure. The bibliography of the last two years is appended.

Pulmonary Tuberculosis in the Pregnant.—Voron declares that treatment should be exclusively medical if the pregnancy has passed the third month; also when the lesions are grave and extensive, or inactive and cicatricial. Medical treatment is indicated also even after the third month when conditions allow artificial pneumothorax, or thorough medical treatment during the entire pregnancy and long enough afterward.

Pregnancy and Tuberculosis.—Weymeersch and Olbrechts present evidence to the effect that tuberculosis does not modify pregnancy much, and the child has the average chance for life and health; but pregnancy seems to reduce the natural defense forces, and this anergy speeds up the tuberculosis. As tuberculosis in the adult seems to be the flaring up of tuberculosis acquired in childhood, this condition of *anergie gravidique*, as Bar calls it, fans the latent embers into a flame. The six articles in this issue were the leading addresses at the third congress of French-speaking gynecologists and obstetricians, at Geneva, in August.

Lyon Chirurgical

20: 421-552 (July-Aug.) 1923

Periarterial Sympathectomy. A. Wojciechowski.—p. 421.
Phlegmonous Enteritis. E. Hammer.—p. 430.
*Cancer of the Parotid. F. J. Collet and P. Bonnet.—p. 435.
Paradental Cysts. H. Aloin.—p. 446.
Innervation of Suprarenals, Kidneys and Upper Ureters. A. Latarjet and P. Bertrand.—p. 452.
Facial Neuralgia. P. Wertheimer.—p. 463.
Encysted Abscess in Tonsil. R. Rendu.—p. 489.

Cancer of Parotid Gland.—Collet and Bonnet report two cases of cancer of the parotid with a paralytic syndrome, drawing therefrom the conclusions that in such cases facial paralysis is always present, and that the syndrome of the retroparotid space seems to be caused by glossopharyngeal, pneumogastric, spinal, hypoglossal and sympathetic disturbances. Prognosis is not favorable, they say, the operability of cancers of the parotid being very limited.

Lyon Médical

132: 635-682 (July 25) 1923

*Coincident Syphilis and Pulmonary Tuberculosis. G. Roque.—p. 635.
Bronchopulmonary Amebiasis. F. Leclerc.—p. 647.

Associated Syphilis and Pulmonary Tuberculosis.—The coexistence of tuberculosis and syphilis was found by Roque in 4 per cent. of his tuberculous patients, and his observations lead him to the conclusion that iodid, on account of its dangers in these circumstances, should in every such case be rejected. Mercurial treatment acts slowly, must be long kept up, and may entail loss of weight and anemia. The only satisfactory results obtained by him from mercury were when it was used in combination with arsphenamin. The most efficacious treatment for this double infection is with the arsenicals. They are dangerous, however, as the tuberculous liver is always diseased, and in some cases a superposed arsenic toxemia might induce flaring up of the tuberculous process. The arsenicals should never be administered in these cases until the laboratory has demonstrated adequate functioning of the liver.

Paris Médical

13: 57-80 (July 21) 1923

Children's Surgery and Orthopedics in 1923. A. Mouchet and C. Rœderer.—p. 57.
Juvenile Osteochondritis Deformans. Frœlich.—p. 65.
Acute Intestinal Invagination. L. Ombrédanne.—p. 68.
Drainage or Suture in Appendicular Peritonitis. P. Hallopeau and J. Baranger.—p. 71.
*Acute Osteomyelitis of Patella. H. L. Rocher.—p. 74.

Acute Osteomyelitis of the Patella.—Rocher reports a case which started inside the joint in the boy, aged 13. The special features of the case were: the sudden onset and rapid evolution (eight days after the first symptoms the articulation was full of staphylococcal pus); his surgical procedure which consisted in total patellectomy after broad arthrotomy, and the satisfactory functional result of the operation. The persisting impotence of the quadriceps muscle has compelled the wearing of an orthopedic appliance to supply elastic traction in front of the joint. Rocher has collected fifty cases from the records of osteomyelitis of the patella; there was a history of trauma in 24, but usually the infectious process develops spontaneously. The osteomyelitis

was acute in all but 5 of the cases. The operations were completely successful in 24 cases; in 10 there was more or less stiffness, and in 3 complete ankylosis. The regeneration of the patella may be anticipated when the cartilage protecting the cavity of the joint and the fibrous periosteal envelop have been saved. In the 10 cases of total patellectomy, regeneration of the patella occurred in 6 patients, all between 5 and 13, but not in 4 other cases including 2 adults.

13: 81-92 (July 28) 1923

Colloidal Theory of Biology and Pathology. A. Lumière.—p. 81.
Iodin Treatment of Trichophytosis. Dong-Ngoc-Dieu and Millous.—p. 88.
Noninfluenzal Tracheitis. G. Rosenthal.—p. 89.
*Syphilis and Mineral Waters. Molinéry.—p. 90.

Syphilis and Mineral Waters.—Molinéry gives a brief account of the utilization of mineral waters in skin affections, starting with reference to their use in the Middle Ages and bringing the history to date. He cites the custom of the South American Indians who, working in the mercury mines, rid themselves of mercurial poisoning by drinking and bathing in sulphur mineral waters. Salles has recently studied the action of sulphur waters on patients with stomatitis during bismuth treatment. The results of his investigation clearly showed that these patients could support much larger doses of bismuth salts than are ordinarily prescribed, when they were taking sulphur waters.

13: 117-128 (Aug. 11) 1923

Sympathetic Factor in Nitritoid Crisis. E. Juster.—p. 117.
*Panasthenia. M. Reinhold.—p. 121.
*Perforated Ulcers of Small Intestine. M. Chabrut.—p. 124.

Panasthenia.—Reinhold takes exception to the term "neurasthenia" because, he claims, its use is so indefinite as to be an acknowledgment of inability to cope with the real situation. The clinical picture of infectious diseases may be regarded, he says, as an acute panasthenia with fever and sudden denutrition.

Perforated Ulcer of Small Intestine.—Chabrut tells of two cases of perforation of the small intestine from ulceration. There was nothing to suggest syphilis or tuberculosis, and the lesion was certainly not malignant. He assumes a simple ulcer, and remarks that these lesions are never recognized until perforation occurs. His patients were two women, about 54, and both recovered after resection of the segment of bowel involved. No evidence of perforation was found in one case in the resected segment, but the discovery of relics of food in the vicinity showed that perforation must have occurred at some time, and the opening must have become occluded. Leotta found diffuse peritonitis in all but one of the twenty-two cases of ulcer of the small intestine he has found on record, and this exception was a necropsy surprise. Bergeret, however, has published a case in which the operation, sixteen hours after the perforation, showed adhesions plugging the opening.

Presse Médicale, Paris

31: 741-752 (Aug. 29) 1923

*Denervation of the Kidney. F. Legueu and P. Flandrin.—p. 741.
*Emetin for Outpatients in Egypt. Ralli and Panayotatou.—p. 742.

Neurectomy for Denervation of the Kidney.—Legueu and Flandrin have severed the nerves in the pedicle of one kidney in two men and six women to relieve nephralgia with hematuria or hydronephrosis, not severe enough to justify nephrectomy but so extremely painful that something had to be done. The pains vanished at once and permanently. One woman who had been completely crippled by the pain, and had been contemplating suicide, was completely transformed by the operation. Their clinical experience thus sustains the physiologic and the surgical bases and the practical utility of tearing out the nerves in the pedicle of the kidney. They left a few nerve fibers intact in the pedicle, and one patient returned several months later to have the other kidney treated in the same way. This was done, and with equal success.

Emetin in Dispensary Practice.—Ralli's thousands of injections of emetin in outpatients at the Greek hospital in Alexandria have convinced him that emetin is a valuable remedy for the liver even in the absence of dysentery. It aids in reducing malarial congestion in the liver and averting suppuration, and it displays a pronounced hemostatic action in the urinary passages and the lungs.

Pediatria, Naples

31: 577-632 (June 1) 1923

*Purulent Pleurisy in Infants. G. Sillitti.—p. 577.
*Syphilis and Twin Pregnancy. C. Gallo.—p. 599.
Combined Leishmaniasis and Malta Fever. A. Emmanuele.—p. 603.
Arterial Pressure in Pediatrics. A. Nizzoli.—p. 609.
Present Status of Diphtheria in Infants. R. Vaglio.—p. 614.

Purulent Pleurisy in Infants.—Sillitti observed 333 cases of purulent pleuritis in infants and young children. Pneumococci were present in the effusion in about 70 per cent. of the cases. These patients had a comparatively low mortality (23.39 per cent.) and some of them recovered without operation. Vaccine therapy gave encouraging results.

Syphilis and Twin Pregnancy.—Gallo found 3.9 per cent. of twin pregnancies in syphilitic mothers while there were but 2.5 per cent. in nonsyphilitics. The total number of twin pregnancies observed by him in eight years at Naples was 690.

Riforma Medica, Naples

39: 649-672 (July 9) 1923

Mechanism of Precipitation Reaction in Tuberculosis. A. de Martini.—p. 649.
*Transfusion of Portal Vein Blood. A. Tommaselli.—p. 651.
*Camphorated Oil Tumor. G. Armuzzi.—p. 654.
Cysts of Dental Origin in Lower Jaw. P. G. Bortolucci.—p. 656.

Transfusion of Portal Vein Blood.—Injection of blood from the portal vein of a digesting dog into the jugular vein of a fasting dog did not modify the blood in the recipient dog in any way differently from blood taken at other points (carotid artery). Tommaselli's research thus fails to confirm Widal's doctrine of the proteopexic function of the liver.

Camphorated Oil Tumor.—Only 1 c.c. of camphorated oil had been injected into the woman's thigh, but inflammation followed, and this inflammatory tumor in the connective tissue has kept recurring. The plastron varies in size from time to time, enlarging at the menses or any febrile infection, or slight injury of the region. The tumor is movable on the deep tissues, is hard and tender, and the skin above is red and hot. Although the general condition keeps good, tuberculin tests were positive and elicited a lively reaction in this elaioma, as Armuzzi designates it, a term analogous to paraffinoma.

Archivos Latino-Amer. de Pediatría, Buenos Aires

17: 481-560 (July) 1923

*Tumor of the Spinal Cord. R. Rivarola and J. M. Obarrio.—p. 481.
Papilloma in Larynx of Child. A. Carrau.—p. 496.
*Cardiohepatic Cirrhosis in Children. E. Portu Pereyra.—p. 500.
Infant Ward in Maternity. L. Velasco Blanco and H. Paperini.—p. 508.
*Pyelitis in Young Infants. M. Valabrega.—p. 515.

Tumor of the Spinal Cord.—In Rivarola and Obarrio's case, in a boy, aged 9, the symptoms were ascribed to a tumor compressing the spinal cord from the seventh cervical segment to the first and second dorsal segments. The cerebrospinal fluid was yellow, and it coagulated completely. It contained no cells and gave none of the reactions specific to syphilis, but the albumin content reached 1 per cent. Contrary to anticipations, the large tumor proved to be in the cord instead of extradural.

Hutinel's Cardiohepatic Cirrhosis in Children.—By coincidence, three cases of this rare disease were in Morquio's service at one time in 1922. The heart valves seemed normal, and the heart itself had not enlarged, notwithstanding the adhesive pericarditis and extensive ascites. The comparatively normal myocardium in such cases helps to exclude rheumatic heart disease. Necropsy confirmed the tuberculous nature of the cirrhosis. Ascites is the first and the dominant symptom throughout. The pericarditis, pleural reactions and hypertrophy of the liver may escape the notice of the family until ascites attracts attention. In the one case described in detail, the condition had been stationary for several months in the girl of 7. Then the tuberculosis flared

up in miliary form, rapidly fatal. The liver showed cirrhosis and fatty degeneration.

Pyelitis in Infants.—Valabrega relates that in six years no case of acute pyelitis in an infant had been encountered in the children's ward, dispensary and milk station in his charge until last November. Then three cases were observed in three months. The pyelitis was secondary to intestinal disturbances in two of the infants, and to influenza in the other. This third infant, aged 10 months, recovered completely in two weeks under treatment with methylene blue alone (0.01 gm. twice a day by the mouth, in a 0.2 per cent. solution). The drug caused no stomach derangement, and it was eliminated promptly in the urine. In the second case the infant, aged 20 months, recovered in eighteen days under methylene blue at first, then hexamethylenamin. The third infant had cystitis as well as pyelitis, and symptoms of nephritis became evident toward the last, the child, aged 7 months, finally succumbing. In a fourth case the infant was only 2 months old, and a convulsion was the first sign of trouble. The pyelitis was primary in this case, and it was mild, with prompt recovery. The colon bacillus was found in the urine in all four cases.

Brazil-Medico, Rio de Janeiro

1: 337-350 (June 23) 1923

Treatment of the Neurasthenic. H. Roxo.—p. 337.
The Teaching of Tropical Medicine. P. S. de Magalhaes.—p. 340.
*Influence of Electrolytes on Bacteriophagy. J. da Costa Cruz.—p. 341.
*Sarcosporidiosis of Pork. G. Hasselmann.—p. 342.

Influence of Electrolytes on Bacteriophagy.—Da Costa Cruz tabulates the findings in twenty-two tests which demonstrated that the bacteriophagic action does not occur in the absence of sufficient electrolytes. His tests were made with a 1 per cent. solution of Witte's peptone. This is nearly free from salts, and when 10 c.c. is inoculated with dysentery bacilli and one drop of the bacteriophage, the bacilli develop luxuriantly without a trace of the bacteriophagic action. But after addition of a little sodium chlorid, calcium chlorid or other salt, to bring the molecular concentration to that of 5 per cent. sodium chlorid, there was not the least trace of proliferation of the bacteria. The same results were obtained with the peptone solution to which 3 or 6 per cent. glucose or saccharose had been added, with the bacteriophage. The colonies grew profusely, but addition of even 1 per cent. sodium chlorid enabled the bacteriophage to work, and no colonies developed. The fluid kept clear. Another curious fact observed was that the proliferation of the bacteria seemed exceptionally luxuriant in the peptone-glucose solution inoculated with the Flexner bacillus and the drop of bacteriophage before the 1 per cent. solution chlorid was added. "The influence of the electrolytes displayed in this research seems to suggest the ferment or antibody nature of this transmissible microbic lysis."

Parasites in Meat.—In this third communication from the Agricultural and Veterinary College, the sarcosporidium found in pork is discussed. In twenty samples of apparently perfect pork, Hasselmann found protozoa of the sarcosporidium group deep in the muscle fibers of the hind-quarters.

Archiv für Kinderheilkunde, Stuttgart

73: 81-239 (July 21) 1923

*Physiology and Pathology of the Circulation. E. Rominger.—p. 81.
*Neuroses in Children. J. Zappert.—p. 108.
*Occurrence of Monometal Phosphates in Body Fluids. R. Berg.—p. 127.
*Thickness of Fat in Abdominal Wall. G. Hille.—p. 134.
Case of Inherited Syphilis in Third Generation. Schweizer.—p. 140.
Severe Forms of Anemia in Sepsis. M. Frank.—p. 142.
*Thrombopenic Purpura in Children. M. Schönberger.—p. 152.
*Relative Isolation of Infants. L. Salmony.—p. 157.
*Minor Manifestations Suggesting Epilepsy. R. Kochmann.—p. 163.
*Arsphenamin by the Rectum. C. Noeggerath and H. S. Reichle.—p. 175.
*Kidney Function During Treatment of Syphilis. Haassengier.—p. 190.
*Tuberculin Treatment of Children. W. Röckemann.—p. 200.

Physiology and Pathology of the Circulation.—The phases of this subject studied by Rominger were the arterial blood pressure and the capillary pressure in children. He tabulates the comparative findings in seventy-five healthy children, from 3 days to 14 years old, and five adults. The capillary pressure seems to be independent of the arterial pressure, but the range is about the same in infants as in adults, keeping at a low figure.

Neuroses in Children.—Zappert discusses in turn the seven groups represented by neuropathies, psychopathies, habit neuroses (from pathologic conditional reflexes or from autoerotism), imitation neuroses, Freud's anxiety neuroses, obsession neuroses, and hysteria. He presents evidence that certain symptoms which we have been labeling as psychopathic, in reality are dependent on endocrine influences. Even the participation of different diatheses can be surmised at times. Nervous children are sometimes hypersensitive to different drugs, some of which may have a directly opposite action. He adds that pediatricians must accept a sexual element evident in certain neuroses, even in quite young children. He says further that the ultimate prognosis had better be guarded in the last three of the groups mentioned above.

Monometal Phosphate.—Berg explains that it is chemically impossible for monometal phosphates to occur in the urine or other body fluid so long as they give the Congo alkaline reaction.

Estimation of State of Nourishment.—Hille measures with a compass the width of a horizontal fold taken up in the skin, down to the fascia, to the right of the navel of the reclining child. This usefully supplements inspection in distinguishing between the underfed and the naturally lean children. The average normal diameter of the fold in 678 children at Greifswald was 4.5 mm. in the boys at the age of 7 (7.5 mm. in girls); at 8:4.5 (8); at 9:5 (8.5); at 10:5.5 (10); at 11:6 (10.5); at 12:6.5 (12.5); 13:6 (12.5); at 14:6.5 (14); at 15:7; at 16:6.5 and at 17:8. A total of 942 children were thus examined.

Purpura in Infant.—The tenth day after birth the child had a hemorrhage from the umbilicus, and the bleeding kept up for three weeks until it was arrested by intramuscular injection of whole blood. There were no further signs of purpura until the child was over 2. Then after a blow on the head from a slight fall, the child developed fever, vomiting and left paralysis, with other symptoms of intracranial hemorrhage. This yielded likewise to intramuscular injection of whole blood. The bleeding time was thirty-two minutes (ear) and thirteen minutes (finger); the blood clot formed but did not retract; serum was not expressed. There were none of the usual signs of thrombopenic purpura on skin and mucous membranes at any time. Twenty minutes after the intramuscular injection of whole blood, the finger bleeding time was four minutes shorter, and the blood plates numbered 172,000 instead of the 52,000 previously found. The paralysis gradually subsided within two weeks. The asymmetry of the mouth was the last to disappear. The case warns of the need to record the bleeding time and the coagulation time in all cases of spontaneous intracranial and umbilical hemorrhage, and to inject whole blood without delay. This seems to exert a stimulating action on the thrombocyte apparatus.

Separation of Younger and Older Infants in Institutions.—Salmony compares the morbidity in 145 infants less than 3 months old, that had been kept separate from other infants, with 145 kept with older infants until they were a year old, and 145 of this latter group of older infants. The data confirm anew the special advantages of isolating infants until they are 3 months old at least.

Recurring Pyknolepsy in Children.—Kochmann bases the diagnosis of pyknolepsy on the extreme frequency of the attacks, their monotonous character and their resistance to drugs of all kinds. The prognosis should be reserved until after puberty; five cases are known in which the pyknolepsy became genuine epilepsy soon after puberty. Treatment seems to be absolutely futile. He describes five cases in detail; one child of 7 outgrew the attacks in two years; in the others, spontaneous remissions of several months were observed, but no permanent cure in any instance.

Arsphenamin by the Rectum.—Arsphenamin kills *Trypanosoma brucei*, and white mice infected with this micro-organism recovered after intrarectal injection of a single dose of about 0.7 mg. of neo-arsphenamin per gram of body weight. The details of the tests are tabulated for twenty-five mice. Nineteen were saved by this means. The curative dose by the rectum seems to be very close to the subcutaneous dose. Eight children were treated with from 0.3 to 0.6 gm. of neo-

arsphenamin by the rectum, and arsenic was found in the urine of the first day in amounts ranging from 0.15 to 0.34 per thousand. The ages ranged from 3 to 6 months in 6; the others were 4 to 13 years old. One child of 4, given 1.2 gm. defecated in an hour and a half, and the urine showed only 0.09 per thousand arsenic. By the intravenous route, the urine contained 2.53 per thousand arsenic after a dose of 0.15 gm. The absorption depends on the length of time the enema is retained. Opium did not seem to help in the experiences related. The outcome therefore of intrarectal administration of arsphenamin preparations depends on the patient's cooperation in retaining the enema. In infants, for whom this method is especially desirable on account of the difficulty of the intravenous technic, the outcome is a matter of luck. The interval before the first stools in these infants was from three to five hours.

Kidney Function During Arsphenamin Treatment of Congenital Syphilis.—Haassengier's charts and curves from five typical cases show that the work of the kidneys proceeded normally throughout the courses of combined mercury and neo-arsphenamin treatment. In the total twenty-seven single tests, nothing to indicate impairment of kidney functioning was observed.

Present Status of Tuberculin Treatment of Children.—Röckemann refers in particular to Petruschky's tuberculin liniment and Moro's tuberculin salve, and describes his experience with these and other methods of tuberculin treatment. He declares that they do not compete with but supplement each other. The liniment is intended to induce a focal reaction, while the salve aims to avoid an internal focal reaction by concentrating the reaction on the skin. The tuberculin is mixed with a substance to soften the horny layer of the skin, and with an excipient which retards absorption.

Deutsche Zeitschrift für Chirurgie, Leipzig

181: 1-144 (Aug.) 1923

*Treatment of Mastitis. Naumann.—p. 1.
*Nephropexy by Fixation from Below. R. Klapp and N. Kleiber.—p. 26.
*Operative Reduction of Hypertrophied Breasts. A. W. Hübener.—p. 40.
*Periproctal Cancer of the Rectum. K. Nather.—p. 48.
*Actinomycosis of Bladder Wall. E. Köster.—p. 60.
*Surgical Complications of Typhus and Relapsing Fever. A. Gregory.—p. 66.
*Hemangiomas of Muscles. E. Gold.—p. 74.
*Origin of Abdominal Pains. K. Buchholz.—p. 84.
*The Stomach After Operations. Bode.—p. 107.
*Occlusion After Gastro-Enterostomy. H. Steindl.—p. 126.
Incarceration of Meckel's Diverticulum. W. Smital.—p. 137.
Formation of Bone in Laparotomy Scar. C. Häbler.—p. 140.

Treatment of Mastitis.—Naumann remarks that mastitis is generally treated with family remedies until conditions reach such a stage it is very difficult to cure. In seventy of 200 cases in Payr's service, the breast was incised below, 1 cm. above the fold, and turned upward (Bardenheuer's *aufklappung* method). This allows access to the abscesses in the breast from the rear by radial incisions, and thorough drainage. When the breast is released, the incision is entirely concealed. Naumann urges this operation as soon as fluctuation is apparent, without wasting time on inadequate and disfiguring partial measures.

Nephropexy from Below.—Klapp and Kleiber draw up the fascia renalis from below, take reefs in it, and suture it to form a solid bag in which the kidney rides freely. Their eleven illustrations show the technic and the excellent outcome in two cases treated with this *fascienreffung*. They say it is far more physiologic than suspending the kidney from a rib or muscle.

Operative Treatment of Hypertrophied Breasts.—Hübener knows of only eighty cases of this kind, and adds another to the list. His patient was a girl, aged 14, and the weight of the huge sagging breasts caused great discomfort. The girl had never menstruated. Both breasts were amputated, retaining the nipples, and the cosmetic result was excellent after a second operation four months later.

Periproctal Cancer.—In the three cases reported, the metastatic periproctal carcinoma was evidently of blood-borne origin and not an implantation cancer. Diffuse carcinoma of the abdomen soon followed. The periproctal cancer is generally assumed to be the primary growth, especially when the primary tumor is not in the abdomen.

Actinomycosis of Bladder Wall.—The actinomycosis was in the form of a villous, polypous tumor of the bladder. The laparotomy revealed an abscess above the bladder, with the rectus muscles hard as wood. The pus contained actinomycetes, and after the abscess had been scraped out, the patient recovered under potassium iodid, roentgen exposures of the bladder and heliotherapy. The man, aged 40, had long had a patch of intertrigo on the abdomen just below the umbilicus, and the ray fungus had secured a foothold here and had invaded the bladder from this point.

Surgical Complications of Typhus and Relapsing Fever.—Gregory states that, in 1920, 13.8 per cent. of his 4,096 cases of typhus presented surgical complications; 10 per cent. in 970 cases in 1921, and in 4 per cent. of the 2,171 cases in 1922. In relapsing fever, the proportion ranged from 1.1 to 3.4 per cent. in 203, 1,124 and 1,376 cases. The surgical complications included abscesses, gangrene, chondritis, osteomyelitis, arthritis and thrombophlebitis. Erysipelas developed in 199 cases of typhus and in 3 of relapsing fever.

Hemangiomas of the Skeletal Musculature.—Three cases of diffuse hemangioma in the muscles of the forearm are described by Gold from the clinical and histologic standpoints. There has been no recurrence or functional disturbance since the radical removal of the hemangioma. The danger is that it may be mistaken for cancer, and the operation thus be unnecessarily mutilating. Even puncture, showing pure blood, may not be decisive.

Abdominal Pain.—Buchholz presents evidence to prove that contraction, from an infectious focus or other cause, in the appendix or colon or elsewhere in the bowel, in the stomach or in the gallbladder, does not induce pain at the spot at first, but only in the celiac ganglion. There is no pain at the spot until the local peritoneum becomes involved. Conditions are different with pain from distention of the bowel; this is felt at the spot, and the pain, periodical at first, gradually grows continuous, instead of the rhythmic waves of pain that correspond to spasmodic contractions. The distention pain gradually wears off, leaving only local tenderness. The pain from peritonitis is continuous from the first, and is more like the pain from a burn. It may fluctuate in intensity but never ceases entirely, and it is strictly localized to the area over the infectious process. The pain-conducting fibers for the viscera are in the splanchnic nerve, and hence the pain from contraction of a viscus is felt in the celiac ganglion.

Differentiation of Gastric Ulcer and Cancer.—Bode discusses in this article the physiology of the stomach after gastro-enterostomy and resection, and describes his success with the fluid interferometer in distinguishing between ulcer and cancer. He has been using this interferometer for a year, and has always found that when it showed the defensive ferments in the patient's serum, the ulcer invariably proved to be of a malignant nature. After the operation, the interferometer also showed when recurrence or metastasis was developing, and thus allowed prophylactic radiotherapy or operative measures in time. Another point emphasized in his article is that cachexia and advanced age do not contraindicate operations on the stomach.

Ileus After Gastro-Enterostomy.—A loop of small intestine had become incarcerated between the stomach, the posterior wall of the abdomen and the anastomosed loop.

Jahrbuch für Kinderheilkunde, Berlin

102: 257-320 (July) 1923

*Goat's Milk in Infant Feeding. E. Brouwer.—p. 257.
Duodenal Juice in Infants. E. Schiff et al.—p. 277.
Digestion of Fat in Infant Stomach. H. Behrendt.—p. 291.
The Granules in the Leukocytes in Infectious Diseases in Children. H. J. Schulten.—p. 303.

Goat's Milk in Infant Feeding.—Brouwer finds a distinct causal connection between the use of goat's milk and severe anemia in infants. He would allow it only after the sixth month.

Klinische Wochenschrift, Berlin

2: 1053-1100 (June 4) 1923

*Analogy Between Leprosy and Tuberculosis. Herxheimer.—p. 1053.
Heterochromia and Sympathetic. F. von Herrenschwant.—p. 1059.
*Epinephrin Reaction in Man. B. Aschner.—p. 1060.
*Epidemic Encephalitis Causing Violent Pains. G. Stertz.—p. 1063.
Dehydrocholalic Acid, Nontoxic Member of Biliary Acid Group. E. Neubauer.—p. 1065.
Fibrinogen Content of Blood in Liver Disease. K. Isaac-Krieger and A. Hiege.—p. 1067.
*Nature of Bacteriophagy. E. Putter and S. Vallen.—p. 1072.
The Wassermann Reaction. K. Monferratos-Floros and G. Sato.—p. 1072.
*Action of Thrombin in Coagulation. E. Wöhlisch.—p. 1073.
Nerves of Thyroid, Parathyroids and Thymus. Braeucker.—p. 1074.
Roentgen-Ray Diagnosis of a Teratoma. J. Pless.—p. 1074.
*Chronic Deforming Arthritis. S. Hirsch.—p. 1075.
Fight Against Venereal Diseases in Stockholm. H. Haustein.—p. 1079.
Significance of Calcium in Blood. E. Billigheimer.—p. 1082. Conc'n.

Analogy Between Leprosy and Tuberculosis.—Herxheimer compares the pathology of leprosy to tuberculosis. He finds a close analogy between the type with nodules in the skin containing many bacilli, and the caseous form of tuberculosis. In the anesthetic form of leprosy, which he compares with proliferative tuberculosis, very few bacilli are found, and the prognosis is better. Reticulo-endothelial cells take up large numbers of bacilli, and degenerate. He found esters of cholesterol and free fatty acids in such cells.

Epinephrin Reaction in Man.—Aschner believes that subcutaneous administration of epinephrin is preferable to intravenous. The speed of resorption is not the main factor except in patients with very pronounced edema. Patients who reacted to subcutaneous injection of epinephrin with a very slight increase in blood pressure, reacted as a rule also feebly to small doses of epinephrin given intravenously. This was especially marked in a case of myxedema. Some of the patients had severe acute pains in the musculature, which she attributes to anemia of the muscles. She is opposed to the terms "vagotonia" and "sympathicotonia," used in a strict sense.

Epidemic Encephalitis Causing Violent Pains.—Stertz describes five cases of encephalitis in which severe pains were the predominant symptom. The cerebrospinal fluid was apparently normal in some.

Nature of Bacteriophagy.—Putter and Vallen correct their former paper. The bacteriophagic properties they found in filtered bouillon were probably due to the use of unsterilized filters, which had been used before for filtering bacteriophages.

Action of Thrombin in Coagulation.—Wöhlisch believes that thrombin changes fibrinogen (which has its isoelectric point in acid reaction) into fibrin with a neutral isoelectric point. Therefore the fibrin coagulates in the practically neutral reaction of the blood.

Diagnosis and Pathogenesis of Chronic Deforming Arthritis.—Hirsch has observed 150 cases of arthritis deformans since 1919, while he encountered only fourteen in the years 1900-1917. A similar phenomenon is the increased frequency of osteopathies. Many cases are developing unilaterally. This depends on static and dynamic factors. The deformations appear at the points of least resistance. He suspects a tuberculous etiology in a large proportion of the cases of arthritis of obscure origin. Removal of diseased tonsils had beneficial effects only in cases of acute rheumatism. It is however indicated for prophylaxis. Exact differentiation between the forms of chronic arthritis is impossible.

2: 1101-1148 (June 11) 1923

Localization of Cerebral Functions. M. Rosenfeld.—p. 1101.
*Shape and Position of Human Stomach. F. W. Müller.—p. 1107.
Myxedema and Pluriglandular Insufficiency. T. Fahr.—p. 1109.
Quantitative Determination of Glycocholic and Taurocholic Acid in Human Bile. F. Rosenthal and M. F. v. Falkenhausen.—p. 1111.
Widal Liver Function Test in Pregnancy. A. Heyn and T. Messtorff.—p. 1114.
*Constitution and Genital Prolapse. E. E. Pribram.—p. 1115.
*Indicanemia at the End of Pregnancy. K. Hellmuth.—p. 1118.
Treatment of Dyspepsia in Infants with Yoghurt. P. Kissoff.—p. 1119.
Physician as Source of Infection in Poliomyelitis. A. Wallgren.—p. 1120.
Nontropical Sprue. H. Schaefer.—p. 1121.
Iodin Treatment of Diseases of Thyroid. Sudeck.—p. 1122.
Dispensary Welfare Work for Cripples. K. Biesalski.—p. 1126.
Finding of Significance as Category of Medical Thinking. O. Schwarz.—p. 1129.

Shape and Position of Human Stomach.—Müller finds that the cowhorn shape of the stomach is due only to the special projection of the stomach, which turns its greater curvature forward. Therefore this form is only a sign of the position, not of the actual shape of the stomach.

Constitution and Genital Prolapse.—Pribram observed among 490 women suffering from prolapse of the uterus, 447 with distinct constitutional deficiencies.

Indicanemia at the End of Pregnancy.—Hellmuth examined the blood of seventy pregnant women for indican. He failed to find any increase above the normal level. This applied even to some patients with eclampsia.

2: 1149-1196 (June 18) 1923

*Endocrine Disturbances in Puberty. J. Wiesel.—p. 1149.
*Arterial Hypertension. J. Pal.—p. 1151.
*Hematoporphyrin and Intestinal Bacteria. H. Kämmerer.—p. 1153.
Theories on Inflammation. H. Gessler.—p. 1155.
Phenobarbital in Treatment of Chorea. F. von Bernuth.—p. 1158.
*Roentgen-Rays and Tubercle Bacilli. Lange and Fraenkel.—p. 1161.
Water Metabolism of Tuberculous Organism. E. Brieger.—p. 1162.
End-Results of Fractures of Neck of Femur. A. Hübner.—p. 1165.
*Increased Sensitivity to Phlorizin in Jaundice. Rosenow.—p. 1166.
Fatty Degeneration. M. Goldberg.—p. 1167.
Serodiagnosis of Syphilis of Rabbits. E. Illert.—p. 1168.
*Cold, Heat and the Thyroid. Parrisius and Schlack.—p. 1168.
Cirrhosis of Liver in a Child. R. Weiss and Bettinger.—p. 1169.
Estimation of Nervous Sequelae of Injuries. M. Reichardt.—p. 1171.
Social Insurance Against Sickness. J. Alexander.—p. 1174.
Present Status of Isolation and Analysis of Antibodies. W. Berger.—p. 1176. Conc'n, p. 1226.

Endocrine Disturbances in Puberty.—Wiesel points out that the whole endocrine system is disturbed if one gland is affected. Not only the sex glands, but also other endocrine (thyroid, suprarenals, thymus) have a normal postembryonic development. The disturbances of the endocrine correlation are almost always due to a hereditary degenerative basis. Abnormal growth of bones, hypertrichosis in girls, or a virile type of hair distribution, hyperthyroidism and chlorosis are the most common types.

Arterial Hypertension.—Pal considers high blood pressure only a symptom, not a disease. It is caused by functional change in the arteries (predisposition to excessive contraction) and starts with "vascular crises" which may be overlooked by the patient. Later on the pressure remains permanently high. He uses the term "hypertension" to designate high pressure in the arteries, and the term "hypertonia" for the increased tonus of the arterial wall, which may persist even if the pressure is low (for instance with heart failure). The primary permanent hypertonia is an angiotonic neurosis, which causes severe anatomic lesions. Its frequency has increased lately. He cites this as a reason to assume a psychogenous origin.

Formation of Hematoporphyrin by Intestinal Bacteria.—Kämmerer found a pronounced formation of hematoporphyrin when blood bouillon had been inoculated with a few loops of the stool of certain patients. The action is due to a synergism of anaerobic and aerobic bacteria.

Action of Roentgen Rays on Tubercle Bacilli.—Lange and Fraenkel found that roentgen rays kill tubercle bacilli only from old cultures (over four weeks). They believe that this refutes the Tribondeau-Bergonié law which postulates that young cells are most susceptible to the rays.

Increased Sensitivity to Phlorizin in Jaundice.—Rosenow found that most patients suffering from icterus become glycosuric after injection of 1 mg. phlorizin.

Action of Cold and Heat on the Thyroid.—Parrisius and Schlack applied bags filled with hot water or ice around the neck of patients with disease of the thyroid, and of controls. The blood sugar sank in nine tenths of the patients after the application of the icebag and in one third of them after the hot water. It rose in more than 50 per cent. of the hot water tests.

Medizinische Klinik, Berlin

19: 965-1002 (July 15) 1923

*Functions of Frontal Brain. Goldstein.—p. 965. Conc'n, p. 1006.
*Masked Cholecystitis. W. Zweig.—p. 969.
Treatment of Tumors with Fluorescent Substances. J. Plesch.—p. 971.
*Perforation of the Uterus. S. Joseph.—p. 973.
*Means to Influence Whooping Cough. C. B. Schroeder.—p. 974.
Hypnoid Neuroses. Rehder.—p. 976.

Study of the Capillary Functions. F. Fischl.—p. 980.
Trauma Exonerated for Abscess in Tabetic Arthropathy. Engel.—p. 983.
Gynecology from Practitioner's Standpoint. E. Runge.—p. 985.
Recent Works on Urology. Paschkis.—p. 988.

Differential Diagnosis of Disease of the Frontal Lobe of the Brain.—Goldstein's study of this subject shows the need for closer analysis of the symptoms from disease in the frontal lobe. The direct consequences of loss of frontal lobe functioning are easier to recognize than those which result from the loss of the frontal lobe's inhibition on the functioning of its three subordinate mechanisms, the cerebellum, the brain-stem and the extrafrontal cortex. The consequence of this isolation of these three mechanisms is seen in the exaggerated reaction to irritation of the vestibular nerve, the exaggerated estimation of weight, size, etc., the protracted motor reaction time, the phenomena of abnormal tension, catalepsy, uncontrollable weeping, mental inhibitions, inability to focus the attention, abnormal uniformity in reactions, abnormal emotional instability, or excessive emotional reactions. With predominance of symptoms from one of these three subordinate centers, it is important to note any suggestion of disturbances from the direct frontal lobe deficit group; for example, any tendency to apraxia with cerebellar symptoms, or to frontal mental disturbances with parkinsonian symptoms. The physical and the mental activity of the frontal brain is along the same general lines, and both, he explains, have evolved from the change in relation to the outer world which came when man began to walk erect.

Masked Cholecystitis.—Zweig has encountered numbers of cases in which the cholecystitis long sailed under the flag of some other disease before the true cause of the symptoms was suspected. In these masked cases, infection from the bowel was responsible for the symptoms, and there were no gallstones. The gallbladder may appear normal to the eye when the microscope will reveal the inflammatory process. In some cases the fever and other symptoms appeared after emotional stress. The symptoms may be merely an atypical fever, with dyspepsia, or there may be atypical attacks of pain, suggesting gastric or duodenal ulcer or appendicitis, but removal of the inflamed gallbladder puts an end at once and permanently to the attacks of pain. In a number of cases the surgeon protested against removing the macroscopically sound gallbladder, but the histologic findings always confirmed the chronic inflammation. In one case the recurring pains were always in the stomach region and extremely severe. A laparotomy showed the stomach and duodenum normal, and the gallbladder macroscopically normal. The surgeon therefore refrained from further intervention. The pains continued, and a year later the gallbladder was removed, when the histologic findings showed severe chronic inflammation. There has not been the slightest return of the pains during the five years since. In another case the chronic cholecystitis was masked by a minute duodenal ulcer. The ulcer was resected, but the pains returned and subsided only after cholecystectomy. In the febrile cases, tuberculosis is generally assumed, and sanatorium treatment is enforced, but without relief. Under forced feeding the symptoms became aggravated, until finally the discovery of tenderness in the gallbladder region, with negative findings elsewhere, cleared up the case, and the supposedly tuberculous patient was restored to health by treatment or removal of the gallbladder. He has found hexamethylenamin useful as a cholagogue and in disinfection of the biliary passages, especially when combined with oxgall, or in the formula: 25 gm. of magnesium carbonate; 25 gm. of sodium bicarbonate; 10 gm. of hexamethylenamin, and 0.3 gm. of papaverin hydrochlorid. A teaspoonful half an hour before meals three times a day. Among the specimen cases described is that of one woman, aged 40, with slight fever in the afternoons for six months, burning pains in the stomach region and hunger pain, with anemia, constipation and cachectic aspect. She had taken several courses of sanatorium treatment in a mountain climate as a tuberculosis suspect, but without benefit. The only objective finding was tenderness in the gallbladder. Under hexamethylenamin treatment the fever subsided, and the woman gained 6 pounds in a month.

Perforation of the Uterus.—Joseph relates that in the 1,500 cases of abortion treated at the Moabit Hospital in the last three years, there was perforation of the uterus in ten cases, and in all but two, a physician had been responsible for the perforation. The prognosis depends on the prompt recognition of the perforation and immediate operation. Perforation may occur with the most experienced gynecologist; the indispensable thing is to recognize it at once and operate immediately. Five of the ten women were thus saved. The perforation had always been with an instrument in these cases.

Treatment of Whooping Cough.—Schroeder injected alcohol into one superior laryngeal nerve in an attempt to reduce the violence of the coughing paroxysms in eleven cases of pertussis. The paroxysms were attenuated thereby only in two or three cases, but he thinks this method deserves further trial as he probably was too timid in his dosage, and he injected only quite young children.

Mitteil. a. d. Grenzgeb. d. Med. und Chir., Jena

36: 577-731, 1923

Roentgen Diagnosis of Duodenal Ulcer. A. Akerlund.—p. 577.
Case of Ossifying Myositis. A. Szenes.—p. 591.
Treatment of Wounds of Lung. L. Biener.—p. 606.
Roentgenotherapy of Cancer. I. K. Nather and H. R. Schintz.—p. 620.
Bactericidal Effect of the Ether Used in General Anesthesia. A. Buzello.—p. 661.
*Paresis of the Diaphragm. J. von Boros.—p. 670.
*Resorptive Power of Peritoneum. C. Prima.—p. 678.
*The Esophagus with Goiter. S. Jatrou.—p. 694.
*Air Embolism. E. Ranzi and O. Albrecht.—p. 709.
*The Stomach Channel. V. Orator.—p. 725.

Paresis of the Diaphragm.—In one of the two cases of relaxatio diaphragmatica reported by von Boros, the left phrenic nerve was completely paralyzed (no response to either faradic or galvanic stimulation of the phrenic nerve). In the other there was paresis (no response to faradic stimulation of the phrenic nerve; slow wormlike contraction of that side of diaphragm on galvanic stimulation). In both cases paradoxic respiratory movements (Kienböck's phenomenon) were seen with roentgenoscopy during Müller's test (inspiration with obstruction of the upper air passages). With normal breathing, the paretic showed some contraction of the diaphragm. Consequently, the discovery of paradoxic movements of the diaphragm under the conditions of Müller's test cannot be interpreted as a certain sign of paralysis of the diaphragm. In the first case, the injury to the diaphragm was the result of contusion of the left chest and shoulder fifteen years before. The second patient was a woman, aged 32, and the etiology of the paresis could not be determined.

Resorptive Power of the Peritoneum.—Prima discusses whether resorption is promoted by increased intestinal peristalsis.

The Esophagus with Goiter.—Jatrou analyzes the factors responsible for retarding the passage of ingesta in the esophagus in cases of goiter.

Air Embolism from Operations and Wounds Involving the Pleura.—Three cases of sudden unconsciousness during operations involving the pleura, two resulting in deaths and necropsy giving no satisfactory explanation, are cited from Ranzi's previous experience. He ascribes the shock to arterial air embolism (air enters the pulmonary veins, passes to the left side of the heart, then to the brain, coronary arteries, etc.). The case of arterial air embolism here reported was in a middle aged man who had been stabbed inward and downward with a long knife. There was a sudden coughing paroxysm a few minutes after primary suture of the skin wound. This was followed by loss of consciousness and development of subcutaneous emphysema on neck and chest. On loosening the sutures, there was a gush of air under pressure from the pleural cavity. The unconsciousness persisted, with flaccid paralysis of both arms and the left leg. The head was inclined to the right and there was conjugate deviation of the eyes to the right. The sensory symptoms were most pronounced on the right side. With return of consciousness, paralysis of accommodation became apparent. All these symptoms gradually subsided in the course of three weeks except that the reflexes were somewhat exaggerated, and there was persistent weakness of the right hand and arm. Albrecht assumes that some supranuclear lesion was responsible for the symptoms, possibly a sowing of the cortex with large numbers

of tiny air bubbles, with formation of myriads of the minute islands described by Spielmeyer in 1913.

The "Stomach Channel."—Orator reviews the present status of the question as to the functional significance of the *magenstrasse* (direct passage of ingested foods from the cardia along the lesser curvature). He also discusses the conditions which favor the location of ulcers close to the cardia.

Monatsschrift für Geb. und Gynäkologie, Berlin

63: 61-184 (June) 1923

*Ovarian Pregnancy. H. Fuchs.—p. 61.
*Glycosuria in Early Diagnosis of Pregnancy. W. Scheffel.—p. 69.
Syphilitic Sclerosis of Vaginal Portion of Uterus. Kehrer.—p. 83.
Huge Retroperitoneal Fibrolipoma. R. Fleischer.—p. 99.
Is the Effect of Irradiation Local or General? L. Seitz.—p. 103.
*Syndactylia. P. Heupel.—p. 111.
Present Status of Protein Therapy in Gynecology. H. Martius.—p. 119.

Ovarian Pregnancy.—In the case described, a defect of the fallopian tube on that side had allowed external migration of the spermatozoa.

Glycosuria in Early Diagnosis of Pregnancy.—Scheffel found that the blood sugar curve rose more rapidly in the pregnant than in the nonpregnant after intramuscular injection of 0.001 to 0.002 gm. of phlorizin, followed by drinking 200 c.c. of tea. As the sugar content of the blood thus rose, temporary glycosuria followed. The blood sugar curve, recorded at fifteen minute intervals, showed a second rise. This has not been mentioned in the other methods of studying the carbohydrate disturbances of pregnancy. This induced glycosuria occurred also, in Scheffel's experiments, during a short period just preceding and just following menstruation, and immediately following the emptying of the uterus (childbirth, abortion). This test cannot be used, therefore, as an aid in differentiating impending abortion from incomplete abortion, but he regards negative findings as positively excluding uterine pregnancy.

Inheritance of Syndactylia.—Heupel expatiates on the close resemblance between the genealogic tree of the family with syndactylia he describes, and a chart typical of heredity according to Mendel's law. A hereditary basis seems unquestionable for the syndactylia. The three middle fingers or toes on one or both sides were fused in one, with a single nail, or variations of this syndactylia were known in four generations: one instance in the first generation; in one of the 4 members in the second generation; 4 of the 7 in the third and one of the 2 in the fourth.

Münchener medizinische Wochenschrift, Munich

70: 865-898 (July 6) 1923

*Decomposition of Hemoglobin. F. Müller.—p. 865.
Cellular Defensive Reactions in Parabiosis. Sauerbruch.—p. 866.
*Changes of Streptococci. R. Schnitzer and F. Pulvermacher.—p. 866.
Medical Oversight of Printing Trades. L. Schwarz.—p. 868.
*Serologic Reaction in the New-Born. K. v. Oettingen.—p. 869.
*The Spinal Fluid at Different Levels. W. Jacobi.—p. 870.
Serology in Dermatology. A. Memmesheimer.—p. 872.
Protracted Meningeal Irritation After Infections. Schwab.—p. 872.
*The Tonsils and Tuberculosis. P. Fischer.—p. 873.
Hereditary Congenital Ankylosis of Finger Joints. Brügger.—p. 874.
Expert Testimony in Case of Malpractice. A. Döderlein.—p. 875.
Intraspinal Insufflation of Air Preliminary to Treatment with Arsenicals. E. v. Thurzó.—p. 876.
Water-Glass for Mounting Specimens. F. Windholz.—p. 877.
A Stick in Rectum. K. Wisotzki.—p. 878.
Torsion of Ovarian Tumor in a Child. J. P. zum Busch.—p. 878.
Neuritis and Polyneuritis in General Practice. Curschmann.—p. 881.
School Physician and Heredity. Welde.—p. 883.
Advisory Dispensaries for Venereal Disease. L. Görl.—p. 885.

Decomposition of Hemoglobin.—Müller recalls old investigations of the Dorpat school on the decomposition of hemoglobin by the action of leukocytes and of liver and spleen cells.

Changes of Streptococci.—Schnitzer and Pulvermacher observed a change of cultures of streptococcus viridans into the hemolytic type. They claim that both are only instances of the different changes which may occur in various strains of the streptococci.

Serologic Reaction in the New-Born.—Oettingen observed that the blood plasma (preserved with sodium citrate) of new-born infants has a pronounced precipitating action on colloids.

The Spinal Fluid at Different Levels.—Jacobi found variations in the protein content of the cerebrospinal fluid at different levels. This speaks against the assumption of a regular active circulation of this fluid.

The Tonsils and Tuberculosis.—Fischer examined the tonsils in 173 cadavers. Death had been from tuberculosis in 161. Only in one case did the data indicate with great probability that the infection had started in the tonsil, but even this one case he considers important. In 73.2 per cent. of the cases of ulcerative processes of the lung, the tonsils presented tuberculous changes. Even minute lesions in the lungs, not ulcerative, were sometimes accompanied by contagious tuberculous foci in the tonsils.

Wiener klinische Wochenschrift, Vienna

36: 409-424 (June 7) 1923

Tar Cancer in Mice. B. Lipschütz.—p. 409.
*Irradiation of Spleen in Gynecology. P. Werner.—p. 412.
*Action of Digitalis on Eosinophils. G. Recht.—p. 415.
Action of Ovarian Extract on Goiter. R. Bauer.—p. 416.
Crisis of Organization of Physicians. E. Ruff.—p. 416.

Irradiation of Spleen in Gynecology.—Werner does not report good results from roentgen irradiation of the spleen in treatment of eighty women with uterine hemorrhage of different origins. One woman who had had for years a negative Wassermann reaction, became positive after the irradiation.

Action of Digitalis on Eosinophils.—Recht found eosinophilia of 6-8 per cent. in patients who had been taking digitalis until vagotonic symptoms appeared.

36: 425-440 (June 14) 1923

*Surgical Treatment of Duodenal Ulcers. H. Finsterer.—p. 425.
Indications for Surgical Treatment of Cholelithiasis. H. Lehmann.—p. 428. Conc'n, p. 450.
Syphilis of the Stomach. L. Neumann.—p. 431.
Operation for Phimosis. G. Hummer.—p. 432.

Surgical Treatment of Duodenal Ulcers.—Finsterer deals with the surgical treatment of those duodenal ulcers that cannot be resected safely. He admits that resection is possible in a larger number of cases than those in which he operates, but the mortality would increase too much. The method of choice, he says, is Eiselsberg's unilateral exclusion of the pylorus with a posterior gastro-enterostomy. The ulcer heals quickly. New hemorrhages or other disturbances are due only to development of an ulcer in the jejunum, which is more sensitive to the acid gastric juice than the duodenal mucosa. Therefore he combines the operation with resection of the stomach (antrum) in order to obtain anacidity or reduce production of the acid gastric juice. A jejunal ulcer occurred only in 5 per cent. of sixty-one patients operated on by this method, which leaves the pylorus in the body. Only one patient died (perforation of the ulcer). Clinical practically complete recovery followed in 94 per cent. of his cases.

36: 441-458 (June 21) 1923

*Muscle Atrophy After Injuries. F. Mandl.—p. 441.
Suprarenalectomy in Epilepsy. E. Kutscha-Lissberg.—p. 443.
*Chlorids in Cerebrospinal Fluid. P. Neuda.—p. 447.
Diuretics in Healthy Children. A. F. Hecht.—p. 449.
Venous Stasis in Treatment of Circulatory Affections. Peller.—p. 449.
General Principles of Welfare Work for the Young. R. Uhlirz.—p. 451.

Muscle Atrophy After Injuries.—The fact that very painful wounds predispose to extensive atrophy of muscles leads Mandl to inject procain intramuscularly into the neighborhood of the fracture. Experiments on frogs and on forty patients demonstrated the value of the method. He injected 20 or 30 c.c. of a 0.5 per cent. solution of procain when the patient was first seen, and repeated this on the two to four following days. Open wounds and fractures, which are easily dislocated, are contraindications. He explains the favorable results by A. W. Mayer's theory, according to which the lack of muscular tonus prevents atrophy. The procain keeps the tonus low, and atrophy is averted.

Chlorids in Cerebrospinal Fluid.—Neuda examined the cerebrospinal fluid from 250 patients for chlorin. The average proportion was 0.72 per cent. (reckoned as sodium chlorid). Meningitis gave lower figures, while the chlorids were rather increased in cases of brain tumors.

Zentralblatt für Gynäkologie, Leipzig

47: 1153-1200 (July 21) 1923

The Mechanism of Childbirth. A. Mueller.—p. 1154.
Technic in Interruption of Pregnancy. E. Kehrer.—p. 1163.
*Biologic Changes from Roentgen Irradiation. E. Klaften.—p. 1171.
Psycho-Organic Correlations in Gynecology. Liepmann.—p. 1174.
Origin and Diagnostic Value of Cutaneous Striæ. Loebel.—p. 1178.

Biologic Changes from Mild Roentgen Irradiation in Gynecologic Affections.—Before and after the application of small roentgen doses, Klaften studied the qualitative and quantitative blood picture, the chemical behavior of the blood serum, the effects on the sympathetic and the autonomic nervous systems, the changes in blood pressure, diuresis, the general symptoms associated with roentgen irradiation, and the local findings in thirty cases. The irradiation was applied with the Apex machine and a Watt tube to the area from the umbilicus to the symphysis; focal distance 23 cm.; 3 mm. aluminum filter and from 6 to 10 H. was applied. The most striking changes took place in the leukopoietic system. In most cases there was leukocytosis, with an increase of the neutrophil elements, and simultaneous lymphopenia. Twice, in cases of primary leukocytosis, the reverse condition was noted. The more marked the inflammatory changes, the more likely it was for leukocytosis to develop. The reverse behavior in cases of primary leukocytosis resembles the result after irradiations given at short intervals, and may be due to temporary exhaustion of the leukoplastic apparatus. The effects of roentgenization in inflammatory affections of the adnexa correspond, in general, to the effects of parenteral, specific or nonspecific protein therapy.

Casopis lekaruv ceskych, Prague

62: 725-748 (July 7) 1923

*Fixation of Scapula. J. Divis.—p. 725.—Conc'n.
*Surgical Treatment of Spinal Deformities. Hanausek.—p. 729. Conc'n, p. 759.
Surgical Treatment of Scoliosis. O. E. Schulz.—p. 735. Conc'n.
Sense of Smell in Diagnosis of Diseases. Cmunt.—p. 740.

Fixation of Scapula.—Divis recommends operative fixation of the scapula in cases of juvenile progressive myodystrophia, if the progress of the disease is not too rapid. His method of choice is Jedlicka's scapulopexy, which wedges the angle of the scapula under a rib, thus avoiding the use of a wire. It shifts the scapula in a sagittal direction, which is necessary for a complete elevation of the arm. The method may be useful in incurable paralysis of the serratus muscle. His illustrations show the technic clearly.

Treatment of Deviations of Spine.—Hanausek reports the results of operative experiments on rachitic children and pigs. His method endeavors to restrict the growth on the protruding side of the spine by suturing together the convex parts of the vertebrae with silk threads (spinous processes in kyphosis, transverse processes in scoliosis).

Tohoku Journal of Experimental Medicine, Sendai

4: 149-274 (June 30) 1923. English and German Edition

Pharmacology of Seaweed. W. Watanabe.—p. 149.
*Action of Sensory Nerves on Epinephrin Output. Kodama.—p. 166.
*Reserve Alkali and Oxygen of Blood in Anemias. T. Odaira.—p. 243.
Glycogen Formation After Infusion of Sugar. K. Sato.—p. 265.

Effect of Stimulation of Sensory Nerves on Rate of Liberation of Epinephrin from Suprarenals.—Kodama, using the "cava pocket" method, found an increased epinephrin output after stimulation of the median nerve in animals. The epinephrin content of the gland was not affected by the large output.

Reserve Alkali and Oxygen of Blood in Anemias.—Odaira found an acidosis if the blood count was under 3 millions.

Hospitalstidende, Copenhagen

66: 457-472 (June 27) 1923

*Surgical Tuberculosis of the Liver. C. Vemming.—p. 457.

Tuberculous Process in the Liver.—In the case reported by Vemming, in a young woman, the first clinical manifestation was a gravity abscess in the sheath of the right rectus muscle, secondary to a subphrenic abscess which was traced to the perforated tuberculous process in the right lobe of the liver. A similar course was observed in thirteen other cases on record. The whole process shelled out readily, after ligation of the larger vessels; resection was impracticable. Recovery was proceeding smoothly when perforation of the stomach proved fatal. Some vessel in the stomach may have been injured during the operation, but there was amyloid degeneration of spleen and kidneys. The patients were restored to health in thirteen of the twenty-one operated cases that have been published. Necropsy in his case showed that the enucleation had been a success; no tuberculous tissue had been left in the liver. The mass removed weighed 320 gm. The liver was not always enlarged in these cases. Brütt has reported great improvement in one inoperable case under roentgenotherapy. Tuberculosis of the liver usually develops silently until the tissues around the liver become irritated. Night sweats and evening fever were noted in some cases. Even when the liver is exposed, it is not always possible to distinguish between a tuberculoma and a gumma. Thöle has collected twenty-nine operated cases of gumma of the liver.

Hygiea, Stockholm

85: 545-592 (July 15) 1923

Ouabain and Digitalis. O. Ohlin.—p. 545.
*Infant Welfare Work. H. Fries et al.—p. 570.

Milk Stations and Well Baby Clinics.—This is the report of a committee appointed by the pediatrics section of the Swedish Medical Association to suggest ways and means for welfare work for young children along all lines.

85: 593-624 (July 31) 1923

*Works of Swedish Physicians. Söderbergh.—p. 593. Conc'n, p. 633.
Insulin in Treatment of Diabetes. R. Roman.—p. 606.

Works of Swedish Physicians in Recent Years.—This article presents summaries of most of the forty-four works on neurologic topics by Swedish writers which have been published in recent years in English, French or German. The Scandinavian writers refrain from using their native language when addressing a world audience, as in their *Acta*, and their works have to be summarized for their compatriots who do not happen to read foreign languages.

Ugeskrift for Læger, Copenhagen

85: 405-420 (June 7) 1923

*Myasthenia Gravis in Exophthalmic Goiter. Vedsmand.—p. 405.
Experiences with Insulin Treatment of Diabetes. Hagedorn.—p. 407.
Intranasal Operations on Lacrimal Passages. Strandbygaard.—p. 410.
*Treatment of Leg Ulcer. C. Engelbreth.—p. 411.
Technic for Rapid Methods of Blood Sugar Determination. J. Christiansen.—p. 411.

Endocrine Pluriglandular Insufficiency.—Vedsmand theorizes to explain the case of a previously healthy woman who at the age of 41 began to complain of headache, sensation of oppression in the heart region and increasing nervousness. By the end of two years the clinical picture of exophthalmic goiter was pronounced, and four years later myasthenia gravis developed, progressing to a fatal termination in two years. The blood pressure fluctuated from 140 to 175 mm. during the last few months. The sugar content of the blood responded normally to epinephrin tests. The condition grew rapidly worse under suprarenal extract treatment.

Treatment of Leg Ulcers on New Basis.—Engelbreth has become convinced that the ulcer in a varix of the leg is the result of infiltration of the tissues. Any treatment which does not attack the infiltration is almost sure to fail, while, if the infiltration is effectually combated, the ulcer will disappear. He describes a case of leg ulcer treated on this principle with light vibratory massage to influence the infiltration, supplemented with yellow light, which he has found useful in treatment of ulceration in general and in eczema. In the case described, the leg ulcer in the man, aged 65, had appeared six years before, and after a course of two years it had healed under a year of bed rest and various local applications. The ulcer had recurred at various intervals but yielded to prolonged bed rest. The present recurrence was of six months' standing; the ulcer was very painful, and the man had been confined to bed. Under the vibratory massage and yellow light applications for one hour on alternate days, the patient up and about all the time, the ulcer healed completely, the skin normal, in three weeks.